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THE

AMERICAN FARMER:

A

MONTHLY MAGAZINE

OF

AGRICULTURE AND HORTICULTURE.

N. B. WORTHINGTON, EDITOR.

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THE

AMERICAN FARMER:

DEVOTED TO

Agriculture, Horticulture and Rural Economy.

[ESTABLISHED 1819.]

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . . *Virg.*

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DECEMBER.

"Though now no more the musing ear
Delights to listen to the breeze
That lingers o'er the green-wood shade,
I love thee, winter, well.

"Sweet are the harmonies of Spring,
Sweet is the Summer's evening gale,
Pleasant the Autumnal winds that shake
The many-colored grove.

"And pleasant to the sober soul,
The silence of the wintry scene,
When Nature shrouds her in her trance,
In deep tranquillity.

WORK ON THE FARM.

The work to be done now, being chiefly the finishing up of the year's labors, requires little to be said beyond a simple reminder of some points of interest.

CORN.

Let all dispatch be used in getting the corn crop placed beyond the reach of depredation. Have a correct account kept of quantity cribbed, and of what is fed to stock in fattening. Have the fodder well secured against loss.

TOBACCO.

Take every opportunity of a good "season" to get your tobacco stripped, that this work may, if possible, be got through with by spring. A great deal of the value of the crop depends upon the manner in which it is handled in stripping.—The careful sorting of qualities, the pressing of the bundles into the shape they should keep in all the after handling, neatness and order in laying the bulks, and watchfulness to prevent heating and discoloring in the bulk, are all points which will demand attention. Let the stalks be preserved under shelter until used for manure.

PLOUGHING.

Ploughing of stiff lands may be carried on with advantage until the ground is frozen.

CARE OF STOCK.

Your stock of every kind, now taken into your especial keeping in the yards and stables, will require the best attention. There is a common impression that animals of all sorts must necessarily lose flesh during the winter season. This is an error whose correction will lie in providing good shelter, sound nutritious food, and a sufficient supply of water above the freezing point; all duly administered.

WORKING STOCK.

Horses and mules at work should be especially cared for. It is not sufficient that they have food enough. Ample stable room, clean bedding, and a free use of curry-comb and brush, rubbing dry and cleaning their feet and legs, always, after their day's work.

Working oxen should always be fed to themselves. If they could receive the same attention bestowed upon horses it would be well repaid.

CALVES.

Calves should be kept in ample pens with shelter to themselves, and fed with the best hay or corn-fodder and some bran.

COWS.

Cows giving milk will require, of course, something more than hay. Bran and meal mixed, and sugar beet or ruta-baga make the best additional food.

SHEEP.

In all ordinary winter weather sheep should be allowed to range in a dry pasture, but shelter open to the South should be provided for bad weather, and troughs for feeding oats and bran.

HOGS.

Your pen hogs should now be fat enough to kill. Keep your breeding sows and store hogs in good order through the winter. Be sure that good shelter and beds will economize food.

MANURES.

The manure crop should now claim your especial attention. Whatever material you can command should be diligently gathered and put through the process of preparation, as an absorbent in your yards or bedding in the stables, or hauled direct to the land as a top-dressing. Our own opinion is, that the sooner manures are put upon the ground the better, and, if circumstances admitted, we should have the droppings of to-day spread on the ground to-morrow. But this is not usually practicable. It should be borne in mind, however, that beyond the need for bedding and absorption of moisture, there is no occasion to pass the extra stalks, straw, &c., through the yards. Better haul them immediately to the field for top-dressing.

GATES AND FENCES.

The material for gates and fences required, should be obtained and prepared for use during the winter.

WAGONS, CARTS, IMPLEMENTS, &C.

See that all these are well protected from weather when not in use.

WORK IN THE GARDEN.

There is little to be done now except to close up such work as was suggested last month.

PLANTS IN FRAMES.

Give air, by raising the sash, to all plants in frames, when the weather is mild. Cover with mats at night when the weather is severe.

COMPOSTS.

Prepare such composts as may be required for the garden, and at convenient times carry them to the ground where wanted.

DIGGING.

Trench and dig stiff clay soils, that the winter frosts may act upon them.

THE FRUIT GARDEN.

In the fruit garden, long litter may be thrown with advantage around the roots of newly planted trees, but it should not be thick enough to afford an harbour for mice.

PRUNING.

Prune hardy trees, scrape moss off bark, and clean away sprouts and banks of soil that may have accumulated about the foot of the trees.

MANURE.

Haul manure and spread on the surface around the trees that require such attention.

THE FLOWER GARDEN.

All out door operations will now be concluded, except that hardy shrubbery may still be planted when the ground is open. Box edging may still be put down.

Your borders may be well spaded and covered with a compost made of old sods, leaf-mold and stable manure, rotted well. Dig the full depth of the spade, and if you can spare the labor, trenching to the depth of two spits is better.

THE GREEN HOUSE.

Be careful to keep the Green House at an even temperature, but with only so much fire as is necessary to protect from frost and promote bloom—say not to exceed 60° Farenheit, night or day. Cuttings of most plants may be put down, and those already rooted should be placed in small sized pots. Water the plants sparingly. Keep the paths damp to avoid dust; pick off decayed leaves, and keep all plants neatly tied up.

How Corn is Preserved in Russia.

At a late meeting of the Academy of Sciences, held in Paris, a letter from M. de Semchoff—a Russian landholder—was read, describing the manner in which corn pits are made in that country. The pits are dug in a dry soil, and instead of masonry, the earthen sides are hardened by a long continued exposure to a wood fire. Before the corn is introduced, the air in the pit is rarified by burning straw in it, after which the grain is thrown in, packed close, and the pit is tightly enclosed. Corn has been preserved in such pits for forty years. Some of our Western farmers, who raise large crops of wheat and corn, should try this method of preserving grain during years when there is a great harvest, in order to lay up a store for seasons of an inferior yield.—*Scientific American.*

The Food Question—Its Chemical and Physiological Investigation.

[From the Mark Lane Express.]

The "food question" is one in which all practical agriculturists are most closely interested. For a long time, all points connected with it were decided by the rough-and-ready, but not always inaccurate, dicta of experience and conjecture; and it is only within very recent times that science has lent her aid in endeavoring to place it upon a sure and certain basis, and to clear it from its many difficulties. The scientific teachings, however, have emanated chiefly, if not altogether, from the chemists, and it is only very recently that the physiologists have claimed to be heard on the points at issue. While the chemists on the one hand have busied themselves with the most laborious of investigations upon, and have, in a theory remarkable for its boldness and apparent simplicity, elucidated the offices performed by the various *substances* of food, the physiologists, on the other hand, insist most strenuously upon the importance, nay, the absolute necessity of considering the value of these substances, not alone, but in connection with the *organism* which they are destined to nourish. While chemists refer the nutritive value of all food to the substances which careful analyses prove them to be composed of, the physiologist, while not ignoring the value of these analyses, maintain that this value is limited; and that, while treating of food, whether for man or for the beasts of the field, the "chief attention," to quote the words of one of the ablest exponents of the physiology of food "should be withdrawn from the alimentary *substances*, to fall with greater emphasis on the alimentary *process;* that is to say, we must less consider what the foods are in themselves, than *what relation* they bear to the organism which they nourish."—(The "Physiology of Common Life," by George Henry Lewes; Blackwood & Sons, Edinburgh and London, p. 56.)

It is the object of the present brief papers to point out the relative positions which the two sciences of chemistry and physiology of food occupy. To enable this to be done, it will be necessary to give a brief *resume* of the chemical theory of food as generally received. This theory owes its exposition to the celebrated chemist Liebig, and has been ably elucidated and exemplified in this country by Professors Voelcker, Lankester, Tanner and others. According to Liebig's hypothesis, the substances or component parts of all foods are divisible into two great classes—the nitrogenous and non-nitrogenous. The former are represented by (vegetable) fibrine, caseine and albumen; and they are said to be plastic or tissue making, as they are capable of being converted into blood, and this again forms the tissues. Hence, the nitrogenous substances are said to be *flesh-formers*. The flesh-forming substances of food—albumen, caseine and fibrine—contain the four elements carbon, hydrogen, nitrogen and oxygen, in exactly the same proportion; as hydrogen 7·0, carbon 54·0, nitrogen 15·5, oxygen 23·5. These flesh-forming substances are found alike in vegetable and animal food, and can be extracted from both with similar results. Thus albumen is obtainable from eggs and blood, and from carrots, turnips, and cabbages by boiling their juices. Caseine is obtained from milk, and also from peas, beans, lentils, &c. So exactly similar, indeed, is the caseine obtained from animal and vegetable substances, that by some chemists they are considered as identical; others, however, do not quite agree to this. Fibrine is obtained from blood, and also from wheat-flour; they are not, however, exactly identical. We do not call the fibrine of wheat fibrine, but designate it as *gluten*.

"The peculiar duty," says Professor Tanner, in his paper on the "Comparative Values of different Kinds of Food," of these nitrogenous compounds is the development of the muscles and tissues of which the body is built up; and the discharge of this duty is known as the nutritive function of food. In fact, the nutritive value of food is entirely dependent upon the presence of these substances, for without them growth is impossible."

Again, the "nutritive value," says Dr. Lankester, "of food depends upon its richness in flesh-forming matter." "Only," says Liebig, "those substances are in a strict sense nutritious articles of food, which either contain albumen, or a substance capable of being converted into albumen," or "only nitrogenous substances are capable of being converted into blood."

The *non-nitrogenous* substances of food are gum, sugar, starch, pectine and fat. They all contain the three elements carbon, oxygen and hydrogen, but in all of them nitrogen is absent. The offices of these substances in food is *not* to supply matter for the composition of the tissues, hence they do not nourish or build up the body; but they maintain animal heat, and supply the muscular tissues with "soft oily juices, which will lubricate them, and render their action smooth and pleasant." The non-nitrogenized substances are, in fact, the fuel which keeps up the animal heat absolutely necessary to enable the organic functions to be performed. Hence the name "heat-givers," or

"heat-forming foods." Non-nitrogenous substances are said to be "burned" in the animal body, just as fuel is consumed in a furnace; burning in this case meaning simply *oxidation*—the rusting of iron for example—or the union of the oxygen of the air, derived from breathing it, with one or more of the non-nitrogenous substances taken into the system. Hence the term *respiratory compounds of food* is given to the non-nitrogenous substances as well as that above noticed, namely, "heat-givers, or heat-formers."

But a third class of substances contained in food is yet to be noticed, namely, the mineral or inorganic, as phosphates of lime, magnesia, soda and potash; the chlorides of sodium and potassium; the carbonates of soda and magnesia and lime, iron, silica, and others not found in large proportion, or of the presence of which, in all cases, some doubt is entertained.

1. "The earthy substances," says Dr. Voelcker, "contained in food, consisting chiefly of phosphates of lime and magnesia, present the animal with the materials of which the bony skeleton of its body principally consists. They may be called therefore, "bone materials."

2. "The saline substances, chlorides of sodium and potassium, sulphate and phosphate of potash and soda, and some other mineral matters occurring in food, supply the blood, juice of flesh, and various animal juices, with the necessary mineral constituents."

Adding to these two expositions of the uses of mineral constituents of food, the following, also from the pen of Dr. Voelcker, we have a complete summary of the chemistry theory of food, as expounded by Liebig, and his followers in this country.

3. "Albumen, gluten, legumen, and other nitrogen-containing principles of food, furnish the animal with the materials required for the formation of blood and flesh; they are therefore called 'flesh-forming substances.'

4. "Fats and oily matters of the food are employed to lay on fat, or to support respiration and animal heat."

5. "Starch, sugar, gum, and a few other non-nitrogenized substances, consisting of carbon and hydrogen, are used to support respiration; hence they are called 'elements of respiration,' or they produce fat when in excess."

Such is the exposition of the chemical classification of food; and, as expounded by Liebig, it, in the words of Mr. Lewes, "is certainly a brilliant effort of genius, and has given an immense impulsion to science. Indeed, that," he continues, "may be said of all Liebig's views; right or wrong, they have agitated Europe, and inspired laborious research. It is not wonderful that he should have missed the truth on this subject, for the subject is far too complex to be embraced by any chemical hypothesis; but the gratitude of Europe is due to him (and is freely given) for having rendered the solution of the problem possible. There, where he found a wilderness, he has left a pathway."

It has been left for Mr. Lewes, whom we have above quoted, to give the first popular, but not the less truly scientific exposition of the importance of considering the physiological bearing of the question of food, and in doing this to show the misconception upon which the "classification" of Liebig's is founded—a "classification," which, although "it has made the tour of Europe, and become stereotyped in lectures and text books," is now, he states, "more or less explicitly relinquished by all advanced physiologists."

It is of vast importance then, to those interested in the food question—and who, among the readers of the *Mark Lane Express*, are not directly or indirectly?—to obtain correct views in connection with it, and thoroughly to understand, not only the constituents of food, but in what way they play their part in the animal organism. This is of vast importance; for the error, if error it is, of methodically analyzing food, and giving to each of its constituents a certain nutritive value, irrespective of physiological considerations, is "*not* a speculative error simply; it is one carrying important consequences. It either leads physicians or farmers into serious mistakes, or leads them to throw up scientific guidance in disgust, because the hypothesis so convincing on paper turns out stubbornly irreconcilable with fact." Mr. Lewes very lucidly endeavors to point out this "error;" and in presenting a very brief *resume*—interspersed with remarks of our own—of his arguments, our readers will best be able to decide whether he has succeeded in really proving it to be one. For a full exposition of all Mr. Lewes' opinions on food and drink, we refer the reader with pleasure to parts II., III., and IV., of his "*Physiology of Common Life*." These form a storehouse of facts and theories most suggestive to the practical man.

Mr. Lewes, be it at the outset observed, is not at variance with chemists at all points, nor is he backward in acknowledging the claims which they have ably labored for, to be considered as assistants to physiologists. He fully admits that the physiologist cannot advance without the chemist's assistance; but chemistry he looks upon as a means of *exploration*, not of *deduction*. "The

chemist," he says, "may analyze fat for him, but he (the physiologist) will request the chemist not to trouble him with hypothesis respecting the part played by fat in the organism. For, although the chemist may accurately estimate the heat evolved in the oxidation of so much fat, the physiologist has to do with a vital laboratory, extremely unlike that in which the chemist works, and he has to ascertain how the fat comports itself there." The nutritive quality of a food is not alone regulated by the amount of organic or inorganic substances which it contains, but by the relation which these bear to the special organism which they are destined to nourish. We say the special organism; for here comes in the proverb, "One man's meat is another man's poison," to remind us of the difference of constitution or temperament existing between different animals; and not only different animals, but between different members of the same class. Thus referring to individuals of our own species, we all know how, while one kind of food pleasantly agrees with one individual, with another it just as painfully disagrees; with one it is a nutritious food; with the other it acts in measure as a poison, disarranging for the time the whole animal economy. How suggestive on this head is the Scottish proverb, "He pits his meat intill an ill skin"! The same meat which fattens his neighbour keeps *him* lean. Nor will those of our readers who have been, and are accustomed to the fattening of animals, fail to remember numerous instances where the same food has had different effects upon different animals; and yet, according to strict chemical analysis, the food contained substances to which a nutritive value was assigned, and which value, if the chemical theory is correct, ought to have had the same effect in all cases. For very interesting examples of the different effects of the same food in different animals, the reader may refer to pp. 59 to 63 of the *Physiology of Common Life*. "Only gross ignorance," says Mr. Lewes, while on this point, "of physiology, an ignorance unhappily too widely spread, can argue that because a certain article is wholesome to many, it must necessarily be wholesome to all. Each individual organism is specifically different from every other. However much it may resemble others, it necessarily in some points differs from them, and the amount of these differences is often considerable." And he illustrates this difference by noticing the difference of the sound brought to the ears of two men, by the same wave of air; and the difference in appreciation of color in the vision of two men affected by the same wave of light; and he says if these things be so, as undoubtedly our readers will admit they are, how unreasonable is it to expect that the "same substance will bear precisely the same relation to the alimentary system of one man as to that of another. Experience tells us that it is not so." In another place, he points out that in building a bridge, or in constructing a machine, we can estimate with accuracy the strength which the materials we use will give us, as the mere putting of them together does not bring about any change in their properties; but in building up the mysterious fabric of the body, as he terms it, how mysterious! for who among us can say what is the principle of *life*? "We have little or no guidance from our estimates of the properties of substances *out* of the body, because the body itself is an important factor in the sum, acting on the substances, as well as being acted on by them; annulling or exalting their ordinary properties in a way quite peculiar to itself." It may be well here to point out what Dr. Voelcker says on this point, not only as corroborative of what has been already stated; but also as indicative of the growing opinion—even among some of the upholders of Liebig's classification of food—that the food question is to be decided not merely from chemical data, but from physiological reasoning. "The *total* nutritive effect which an article of food is capable of producing thus depends, first, on the presence of all those substances, (nitrogenous and non-nitrogenous,) and secondly, on a variety of circumstances to which I beg now to direct the attention of the reader. In estimating the practical value of an article of food we must take into consideration—1st, The age of the animals. 2d, The various kinds of food. 3rd, The natural disposition or temper of the animals. 4th, The purposes for which the animals are kept." On all these points the Professor enlarges; space, however, precludes us from giving his remarks in full; a slight glance at their nature is, therefore, all that is permitted us. On the first point, young animals require a more concentrated and easily-digestible food than old, with a view to supply muscle and maintain their rapid growth; the conclusion being that food highly nutritious for old will be totally unfitted for young stock. On the second point (see above) he states that it is well known that what is suited for one animal, as a horse, is not so for another, as a cow; the nutritive value of food varying with the description of the animals to which it is given. The natural (third point) disposition of the animals influences the nutritive value of the food; one breed of cattle, for instance, as the Herefordshire

or Shorthorns, fattening better than another breed, as Welsh or Kerry cows. The effect, also (fourth point) of the food is influenced by the work which the animal does, or the purposes for which it is kept. After fully dilating upon these points, Dr. Voelcker has the following physiologically suggestive remarks: "These few examples show that the opinion which is generally entertained of food cannot be invariably the same, but is regulated, amongst other circumstances, by the purposes for which the animals are kept on the farm. The fitness of the same kind of food thus varies with the age, natural disposition, and kind of animals to which it is given, as well as with the purposes for which they are kept on the farm; and it is, therefore, quite impossible to classify the various articles of food in an order which will indicate their relative feeding values in all cases. But"—and here the reader's attention is particularly directed to the physiological value of Dr. Voelcker's remarks—"supposing the *composition of food to be known*, and the wants of the animals are well considered, it is still *impossible* in all cases to *estimate beforehand* what practical effect a feeding substance will produce; for *it may be rich* in flesh-forming substances, and contain fat and heat-producing compounds, as well as saline and earthy matters, and yet it may be, comparatively speaking, but poor food, *inasmuch as its constituents are not assimilated by the animal organism*. The digestibility of food consequently is a point which ought to be kept well in view in estimating its nutritive value. Our knowledge of this process of digestion unfortunately is so limited, that we cannot speak definitely of all the conditions which regulate the digestibility of food. Still, however, a few circumstances may be pointed out by way of example, which influence the assimilation of food by the animal system." And here follows an enumeration of these, as—(1.) Of the kinds of animals. (2.) On the amount and character of the woody fibre contained in food. (3.) On the amount of flesh-forming substances. (4.) On the bulk of the food. (5.) On the form in which the food is presented to the animal. (6.) On small proportions of subtances with which we may not be even acquainted. Still further, the nutritive value of food is influenced by (1) the prejudicial substances which food may contain; (2,) by the mechanical effect the food exercises; (3,) by the physical condition of the food, and (4,) by the flavor which it imparts to the meat or milk. All these points Dr. Voelcker fully illustrates; but his remarks, valuable as they are, space precludes our giving. The reader will find them *in extenso* in the fourth volume new series of the Journal of the Bath and West of England Society.

In the above extracts we have marked certain passages in *italics*, to indicate the very important bearing which physiology *must* have upon the food question. For here chemistry owns itself in fault, and tells us plainly that analyses will not alone show the real practical value of the foods we use. And we find one of the ablest exponents of Liebig's theory pointing out to us a startlingly wide variety of circumstances influencing the value of food, other than the constituents which chemistry unfolds to us. Truly this long list of influencing circumstances says plainly to us that "there are," to paraphrase a well-known saying of our dramatist, "other things than are dreamed of in our *chemical philosophy*."

Mr. Lewes draws attention to the danger of supposing that the nutritive value of a food is to be estimated by the nitrogenous matters it contains. This, doubtless, was maintained to be the case for some time after the publication of Liebig's classification of food, or, as we call it, his nutrition theory. It is right, however, to state that Mr. Lewes does not seem to be aware that our first authorities in agricultural chemistry admit, and have indeed for long admitted, that this view is not tenable—that a *mixture* of the various constituents of food is, in fact, essentially necessary to form a wholesome feeding material. Dr. Voelcker is very clear on this point, and sums up his statements thus: Starch, sugar, and the other elements of respiration alone cannot sustain the animal body. Albumen, gluten, or any other albuminous matter alone does not support the life of herbivorous animals.

But while chemistry and physiology are at one as to the fact that animal economy requires "food which is both tissue-making and heat-making to repair the fabric and sustain the temperature," they are remarkably at variance as to the offices which the various constituents of food fulfil. Thus, while the chemist, as we have already shown, following Liebig's teaching, maintains that the nitrogenous substances *alone* furnish the animal with the materials required to form blood and flesh, and that the non-nitrogenous *alone* maintain the heat and respiration, but cannot make the "slightest particle of flesh," the physiologist maintains that the nitrogenous constituents are not only tissue-making, or, to use Liebig's term, plastic materials of food, but that they are heat-making as well; moreover, that the non-nitrogenous substances of food are not merely heat-making, but that they are tissue-making as well. "The division of food," says Mr.

Lewes, "into nitrogenous and non-nitrogenous is a chemical division to which no objection need be made, for it expresses a chemical fact. But when the fact, that albuminous substances form a necessary proportion of organized tissues, is made the ground for specially distinguishing them as plastic, and when the presence of nitrogen in these substances is made the ground for specially distinguishing nitrogen as the plastic element, the percentage of which is to afford the standard of nutritive value, we see a striking example of chemical reasoning applied to physiology, which a confrontation with nature suffices to upset. For observe: while it is true that "albumen is the foundation, the starting-point, of the whole series of peculiar tissues which are the seat of vital actions" (Liebig)—"while it is true that the peculiar characteristic of organized tissues is that they contain albuminous substances as necessary ingredients—not less is it true that the *other* substances thus arbitrarily excluded from the rank of tissue-makers (namely, the fats, oils, and salts, all destitute of nitrogen,) are as essential as albumen itself. *Not a cell, not a fibre, can be formed, nor can subsist, without a certain amount of fat and salts.* Not a tissue can come into being, or continue its functions, without a large proportion of non-nitrogenous materials, a proportion greatly *exceeding* that of the nitrogenous." Very different, indeed, is this statement of physiological facts from the chemical statements which have so long been placed before agricultural readers. It is not here for us to go fully into the arguments of Mr. Lewes; it is enough if we now give the leading features of the question, and awaken the curiosity of the reader, so as to prompt him to consult Mr. Lewes' work, and to inquire fully whether these things which he so lucidly states be so or not. Anatomical evidence apparently is clear upon the point that no animal tissue exists composed of albumen or other nitrogenous substances *without* the admixture of fats, water, and salts; and physiological evidence is equally clear upon the point that "albumen undergoes chemical changes, accompanied by the disengagement of heat." Therefore, says Mr. Lewes, the classification of Liebig "must be rejected." Liebig is not unaware of these anatomical and physiological objections to his theories, but he considers all substances which he finds in muscle, over and above the albumen in it, as "mere accessories." But what Mr. Lewes states seems very reasonable, if not very convincing.—"But to the anatomist *all* the substances are essential, because it is by their *united* properties that the muscle performs its peculiar offices. A muscle deprived of its water will no longer act as a muscle; the anatomist, therefore, regards water as *essential* to the muscle—the chemist regards it as an accessory. In the laboratory, the water may be disregarded; it will not interfere with chemical reactions. In the organism, the water is just as essential to the functional activity of the muscle as the albumen itself."

Mr. Lewes goes also pretty fully into an investigation of Liebig's statement, that the non-nitrogenous matters are not useful as furnishing plastic material, but that "they only serve to keep up the temperature of the body, being rapidly burnt in the body." We cannot go fully into the matter, but have room only for the following suggestive statements, which Mr. Lewes gives in support of his argument that the non-nitrogenous matters of food are plastic or tissue-making. "That fruits are eaten in southern climates which are less heat-producing, because they contain much less carbon than the train-oil eaten in polar regions, would be a tolerable argument, if only fruits were eaten in the South; but the Sicilian and Neapolitan eat more oil than the Swede, and their macaroni is a highly carbonized substance; and the Hindoo often subsists on rice and butter—substances highly carbonized, and classed as chiefly respiratory, furnishing in superabundance that very heat which his climate renders so undesirable. According to *theory* the Hindoo should eat very little non nitrogenous food, and be content with plastic substances, since he wastes his tissues in daily labor, but does not stand in need of any surplus heat; whereas, according to *fact*, he eats very little nitrogenous food, and a great deal of 'heat-making' food."

Chemistry has hitherto assigned a very unimportant part to the inorganic substances of food. We have seen that, with the exception of the part played by the phosphates of lime and magnesia, which act as the furnishers of "bone materials," and the saline substances which supply the blood and animal juices with the necessary mineral ingredients, no other office is assigned to them, and *water* is entirely ignored. Physiology, however, claims to pay attention to *all* the constituents of food, and expounds, as a principle, that "that is an aliment which nourishes; whatever we find in the organism as a constant and integral element, either forming part of its structure or one of the conditions of vital processes, that, and that only, deserves the name of aliment."—Accepting this as a truth, which is indisputable, Mr. Lewes goes on through many pages of his work, every line of which is interesting, to prove what will doubtless surprise many of our readers

to know, that of the two great classes into which he divides food—the "inorganic" and "organic," —the inorganic is the "more important of the two, supposing always that a question of degree can be lawfully entertained where both kinds are indispensable." For the details of the proof, we must refer the reader to the work itself.

It is impossible, in the short limits of a paper like the present, to do full justice to the subject; our aim has rather been to draw attention to the important light which physiology is able to throw upon many of the points in connection with the "food question," on which chemistry *alone* fails to be explicit, and easily understood. We have endeavored, without prejudice, to give a fair statement of the views, both of the chemist and the physiologist, leaving the reader to decide on the various points at issue between them. We can only regret that the present opportunity is not available for us to advert to many of the points opened up by Mr. Lewes. It may, however, be serviceable to give, in the space which still remains to us, a few detached or isolated sentences which will be suggestive of the claims of the physiologist to be heard, and what he advances patiently investigated, on points which the chemist has hitherto taken under his care, and of the principles which he has undertaken to be the chief exponent:

1. "It may be unusual to call these (salts, water and gases) nutritive principles, but, if unusual, it is not unscientific. If 'to nourish the body,' means to *sustain its force and repair its waste*, if food enters into the living structure, and if all the integral constituents of that structure are derived from food, there can be nothing improper in designating as 'nutritive,' substances which have an enormous preponderance among the integral constituents." (p. 99.) *

2. "Water is, *longo intervallo*, the most sustaining of all articles. Life, we know, may be prolonged for weeks without any organic food being taken, if water be fully supplied; but life will not continue many days when water is withheld. If, therefore, the purpose of food be to sustain the organism, that article which sustains it longest, and can with least immunity be withheld, must be the most nutritive of all; and thus water claims pre-eminence over beef."† (p. 102.)

3. An important consideration "has been little regarded by the majority of those who have written upon food—the consideration of the profound differences which may result from simple differences in the *state* of substances. The chemist, in his elementary analyses, necessarily gives no clue to such differences. He tells us *of* what elements an article is composed, but he cannot tell us *how* these elements are combined, nor in what state the substance is. Even when he has ascertained the real composition and properties of any substance, he has still to ask the physiologist what are the *conditions* presented by the organism in which this substance is to undergo chemical transformation." (p. 111.)

4. "To the chemist, there may be little or no difference between plant and flesh as food; * to the physiologist, the difference is profound. He sees the lion perishing miserably of inanition in presence of abundant herbage, which, to the elephant or buffalo, furnishes all that is required. The ox eats the grass, and the tiger eats the ox, but will not touch the grass. The flesh of the ox may contain little that is not wholly derived from the grass; and the chemist analyzing the flesh of both may point out their identity; but the physiological question is not, What are the chemical constituents of nutritive substances? it is, What are the substances which will nourish the organism? If the animal will not eat—or, having eaten, cannot assimilate—a certain substance, that substance is no food for that animal, be its chemical composition what it may." (p. 115.)

5. "Vital processes depend on chemical processes, but are not themselves chemical, and cannot, therefore, be explained by chemistry. There is something *special* in vital phenomena, which necessarily transcends chemical investigation. We need not pretend to settle *what* vitality is, or on what the speciality of its phenomena ultimately rests, to be assured that it is something different from what goes on in laboratories, and demands other tests than those furnished by chemistry... ..No analysis of a nerve will ever throw light upon sensibility; no arrangement of chemical formulæ will explain the form and properties of a cell..... Chemical analyses may conduct us to the threshold of life, but at the threshold all its guidance ceases. There a new order of complication intervenes—a new series of laws has to be elicited. Chemistry confesses its inability to construct complex organic substances, or even to say *how* they are constructed; it can at present

* Water forms two-thirds of the living body; and of the remaining third, one-third is composed of mineral substances remaining as ashes.

† Water is not given by Liebig in his list, or classification, of food, yet anatomy shows it to be an "*essential* element of tissue."

* As will be seen from a statement at the beginning of this paper, chemists have held the identity between vegetable and animal albumen and caseine, &c. Mulder has shown the inaccuracy of this opinion.

only say of *what* they are constructed. This being so, it is clear that every attempt to explain chemically the nutritive value of any aliment, by an enumeration of its constituents, must belong to what Berzelius admirably styles 'the physiology of probabilities.' " (p. 64.)

We may again return to the subject; meanwhile we recommend its careful consideration to our readers. The points at issue between physiologists and chemists are of the greatest practical importance. No where are they so popularly and at the same time so lucidly expounded as in the work of Mr. Lewes, which has formed the basis of our paper. B.

[For the American Farmer.]

Acclimation of Animals.

To whatever part of the world we direct our attention we trace the idea of a Creator, who delights to communicate life, and to multiply the means of enjoyment. From what spot of this prospect shall we commence? Struck with the vastness of creation, we stand as it were in the temple of the universe, insensible to everything but our own insignificance. We know not scarcely how to commence, so prolific of instruction and so attractive is every page of this vast volume; for when we look around us, all things conspire, with one accord, to arrest our attention. His care is seen in distributing, through the various regions of the earth, different species of quadrupeds, whose natures are so admirably suited to the places of their residence that it is difficult to determine which receives the greatest portion of happiness. The white Polar bear that dives with ease to chase the seal amid the rolling waves, or seated upon a cake and drifted among fields of ice from Greenland to Iceland. The Kangaroo that leaps from ramparts twenty-five to thirty feet in height, which abound in the lonely and dense wilderness of New Holland. The Nylghaw that conceals itself during the day in those dreary and impenetrable forests of India. The Giraffe, formed by nature to adorn the woods that clothe the boundless plains of the interior of Africa. The Chamois that lives upon the loftiest ridges of mountainous regions of Asia. Or the Reindeer whose habitation is limited to the coldest regions of the Globe, drawing the Laplander in his sledge over the frozen lakes and rivers, or over the snow that continually invests that country.

There can be no doubt that every animal is seen to the greatest advantage in the haunts which nature destined them to adorn, and they are among the various living creatures which beautify creation. But we have now to investigate the properties of a race of animals more widely diffused and possessed of instances of very superior advantages. Quadrupeds, muscular and strong, tread the earth in common with man, and are either subdued to docility, or compelled to confine their residence within those dark and impenetrable forests which the industry of man has not leveled with the ground. Among the animals that might be useful were they imported to America, are the Lama which inhabits the lofty mountains of Peru and Chili, and other parts of South America. It is so gentle and tractable that it is used as a beast of draught and burden. These quadrupeds proceed on their journies with great gravity, insomuch that nothing can induce them to change their pace. Like the camel they lie down to be loaded, and when exhausted with fatigue no blows can excite them to advance. In a fit of apparent caprice they will sometimes lie down, when caresses alone will prevail. They will then rise again. They are used to carry the rich ores from Potosi to Cozera, a distance of two hundred leagues; they usually consume two months; they march in troops and are accompanied by forty or fifty others to relieve those which are fatigued. Their conductors encamp under tents to allow them to pasture by the way, for they require no other feed.

If we cast our eyes over the immense extent of Asia we shall find multitudes of cattle dispersed over its hills and plains, from the confines of the icy sea to the extreme point of the peninsula of Malacca, and from Arabia to Japan. Among those have been noticed some extraordinay varieties, particularly the Zebu, which has the appearance of a misshapen ox with a fleshy bunch on his shoulders, which, however, is more conspicuous on the male than the female; the ox is fastened to the plough and put to every kind of work by the Hindoos. The Galla or Junga oxen are celebrated throughout Abyssinia for their immense size and the great length of their horns; they have a naked and black skin resembling that of the elephant. In Egypt they are much thought of; the cows yield plenty of excellent milk. In Persia, the island of Sumatra, and other countries in the East, this breed has been greatly multiplied for the purposes of labor.

The Buffalo is a native of the warmer parts of India and Africa, and is merely one of the introduced, or naturalized quadrupeds of Europe.—It appears to have been brought into Italy as early as the seventh century, and is still reared in the Pontine marshes; but since the introduction of the domestic ox into Europe it has prodi-

giously multiplied at the North and South.—Among the many breeds of the North that of Switzerland seems to be carefully bred; the farmers of the Alps take great pride in exhibiting their stock of cattle once a year, on procession days; for example, the canton of Appenzel are adorned with large bells suspended from scarlet thongs, and every *senn* (a cow keeper) has a harmonious set of at least two or three bells. The *senn* arrayed in his best garb, leads the van, singing the herdsman's song—then comes the handsomest cow with great bells, and then the others follow with smaller ones; these are succeeded by the rest of the herd; the bull with the milking stool on his horns, and two white horses drawing the sledge containing the implements of the dairy bringing up the rear. These animals when dispersed among the Alps are brought together by the *senn*, who allures them to him by singing the herdsman's song.

The breeds of domesticated animals are varied and so organized as to minister to the wants of the human race in the different climates of the world, and to accompany man in all his migrations over the earth. To make permanent varieties then becomes our duty. The gentleman who does this by the application of his time, his scientific knowledge, his labors or his wealth, carries out the design of a superintending Providence. The introduction into America of useful animals already domesticated in other parts of the world, commenced years ago. Among them we have recently the camel, or the ship of the Desert, which has navigated the pathless sand oceans of Gobi, and the Sahara, extending the humanizing influences of commerce and civilization over the barbarous African and Siberian savage. Most of the fine animals of Europe, the breed of cattle and sheep of Great Britain, France and Germany now have been acclimated and bred in America.

Passing over many valuable quadrupeds from various parts of the world, we find among birds quite a number which promise to be of value if acclimated and domesticated in America. The Mandarine duck, remarkable for the richness and singularity of its plumage. The beautiful colors of this bird have struck the eyes of the Chinese; they have painted it on their porcelain and their finest paper. The Coscoroba goose, of snow white color, found in Chili; the crested Penelop or Guana bird, nearly the size of our Turkey; it is very tame; the flesh is much esteemed in Brazil. The white swans with black necks, that inhabit the rivers of South America, and the red partridge, the largest of its tribe, that frequents the rocky parts of Greece. The white Grouse or Ptarmigan, which is fond of lofty situations, where it braves the severest cold of the Northern parts of Europe, even as far as Greenland. The black Woodpecker of Switzerland, where it lives on the insects which it catches on the bark or between the wood and bark of trees. The destruction of insects by birds is a matter of great importance to the agriculturist, and where the insect eating birds are few, the insects injurious to vegetation multiply to an enormous extent. A large number of insect destroying birds have been carried from England to one of her Australian colonies with a view of acclimating there a race that would protect the crops from the ravages of insects. Many insect destroying birds find their way to our country for the beauty of their plumage and the melody of their songs. Bird dealers reside in many of our seaboard towns, and foreign birds bringing very high prices, have made it a profitable business to import birds from all parts of the world. Considerable care has been taken by the fancier to acclimate them, but many escape from their cages and soon seek that part of our country suitable to their nature; seek a mate from the birds of our forests and propagate a race for the investigation of the naturalist. Also, many birds have been imported from all parts of the world by gentlemen to adorn their rural residences. And others have imported them merely for fancy and the pleasure of breeding rare, foreign birds, who spare no time or expense to acclimate them, and provide each kind with all the necessary comforts suitable to their nature. For the Aquatic birds a pond should be made to cover a quarter of an acre of land, with a running stream of water to feed it; ornamental rock work with a few shells should surround it, here and there a tasteful breeding house and low water plants. Its centre should have an island with a convenient breeding house for the swans, and with a few low shrubs and a kind feeder many of the rare water birds may be induced to breed. The following kinds have been successfully bred in America; the Egyptian goose, one of the solitary wanderers of the Nile, the most beautiful creature of its tribe; the Java goose, from the Island of Java; the white Swans, from the Zoological Gardens of England, and the white Canton geese. Of other sorts there are the gold and silver Pheasants, and the silky Fowls, all of China; the white Peacocks of India, the various kinds of Pigeons, and the ring neck Dove of Europe; and that charming little warbler from the Canary Islands. The Canaries have all been successfully bred and acclimated in America, but the following species seem to do well in our cli-

mate but have never as yet bred; the black Swans and Cereopsis geese of New Holland; the Bean geese and the ring necked Pheasant of England. Of the many animals or birds which man has thought fit to carry with him from one country to another, perhaps only a few survive, but those that do survive become the progenitors of an acclimated race, so that out of a great number tried only a few survive to reproduce their species. Their offspring will then multiply and continue to produce in their new climate.

The different species of birds and animals that could be acclimated in our country is very great, and some possess interesting peculiarities of structure and beauty. England has her zoological society for the acclimation of birds and animals, and many of her private gentlemen have paid great attention to the subject. France has established a society of acclimation which promises to be of great value in introducing wild animals and birds to acclimate and domesticate. Among the many animals received by this society are a troop of Yaks from Shanghae, and the Eland of South Africa, a large heavy animal weighing nine hundred pounds, the largest of the Antelope tribe. The acclimation of animals from foreign countries by England, France and the other countries of Europe is a very useful and praiseworthy enterprise. It would be still more so in a country which offers so vast a field for the support of animal life as does our own.

The naturalization of foreign wild birds and domesticated animals is, at the present day, by no means a neglected subject in this country, for not to speak of other instances of progress, it is well known that Thomas Winans, Edward F. Jenkins, Richard France, Samuel Sutton, William McDonald, and the writer, have introduced into their native state more than one pair of valuable animals and birds, and, in fact, it may be said, have commenced a system of acclimation.

J. JACOB BOWER.

LAND SALE IN ANNE ARUNDEL COUNTY.—We learn that Henry W. Rogers, Esq., broker, has recently sold the valuable fruit and wine farm of Major Giddings, known as "Severn Side," to Geo. S. Marsh, Esq. It contains 550 acres. The largest vineyard in the State is that at "Severn Side," the wine crop this year being nearly 10,000 bottles. The terms of sale have not transpired. As some indications of an existing confidence in real estate, Mr. Rogers has had changed hands, through his agency, within thirty days past, property to the amount of $132,000—$72,000 of which has been cash sales of farming property in this State.

Stable Management of Horses.

BY VERE D. HUNT, DUBLIN.

An entrance into the generality of stables will forcibly strike the observer with the very neglectful and impure state in which they are kept; and if he should hazard an observation to the owner upon the want of ventilation, he may be pointed out a couple of holes cut in the door, which, as may be inferred, he intends for entrance of pure, and exit of impure air, he has not taken a philosophic view of the subject, nor remembered that the superior weight of the atmosphere prevents the exit of the poisonous and lighter fluid.

The proper means to be adopted for the purification of the stable, will be having a mode of ingress for the pure air, about two yards distant in the walls of the stable, near the foundation, and a similar channel for egress at the opposite wall, above the horses' heads, as high as possible. The holes over the heads may be nine inches square, and those on a level with the ground at the opposite wall not more than four inches. The working of such machinery can be easily discovered by placing a feather or lighted candle at the openings near the ground, when either will be blown inwards, proving an inward current of atmosphere or pure air; while a similar trial at the holes near the ceiling will show an outward stream of the lighter poisonous gases. The man must be either very obtuse in intellect, or very reckless of his own interest and his servant's comforts, that after consideration of these facts will neglect the remedy within reach of the poorest and most niggardly.

Ignorant grooms will frequently stop the ventilators with hay, more particularly in winter, either not knowing, or not caring that ventilation is as requisite at one season as another; and that if accustomed to a healthful current of air, the most tender horse will never take injury from it.

In building stables, I should never have them lofted, preferring straw and hay houses on the ground floor attached. I would also recommend brick floors, with the barest incline in stalls that will suffice for cleanliness, as sloping stalls are to the poor animals places of purgatorial torment, only temporarily alleviated by their absence at work or elsewhere. A horse resting in the natural state when standing, will face down an incline; and many in the plenitude of their wisdom expect to give repose, by tying him in a contrary direction to that which nature dictates. It would exceed the intended limit of this essay were I to enlarge upon the subject, and by an anatomical synopsis prove the why and wherefore; suffice it to say, observation of the poor animal's attitude

when standing in stalls with considerable incline, their hanging upon the collar-shank, and uneasy changing of legs, will testify to anything but repose of frame.

Pipes sunk for conducting the urine to a liquid manure receptacle, will be found to materially enhance the dryness, cleanliness, and comfort of stables, and to save for the farmer a valuable addition for agricultural purposes. I object *in toto* to tying horses' heads in stalls; the animals are thereby debarred volition, and must place themselves in what should be their hours of ease, not as they wish, but as their master or custom ordains. Dung or litter should never be allowed to accumulate for a moment, but should be removed to the dung-heap, which should never be within *smelling* distance of a stable. The more room a horse has, the less liable will he be to diseased legs and stable accidents. Though stalls may indifferently accommodate moderate horses, I should say boxes were indispensible for valuable ones.

I recommend crushed oats in preference to corn *au naturel;* but for hard work it should not be given without beans. A thermometer should always be a stable adjunct, and the temperature regulated accordingly. The system of bedding down horses in the day-time is wrong. The mechanism of the foot is peculiar for delicacy of structure; surrounded by a flexible sheath in a horny case, whose efficiency is consequent upon its flexibility, or power of assimilating its form to the delicate parts it was formed to shield and sympathise with, by elasticity relieving pressure; when in a natural state, and in constant contact with the sod, damped by rain or moistened by dew, everything seems calculated to promote flexibility. In the stable the contrary is the case; constantly buried in straw, they cannot throw off that which is at all times being generated in them. They dry, harden, lose flexibility, and so far from performing the part nature intended, they press upon the delicate and sensitive parts beneath, generating "grogginess."

This evil is easy of amendment; let the horse stand on the bare floor of his stable during the day-time, with his feet stuffed with cow-dung. The litter should be placed anywhere rather than in his stable, for the generation of ammonia from the urine with which the litter may be impregnated, is productive of serious mischief to the eyes. A judicious amount of warmth is very desirable in a stable, and which is quite consistent with thorough ventilation; but overclothing is a very ignorant and injurious custom. So far from inducing health, vigor and development of muscle, the practice has an opposite tendency, rendering the animal more sensible of any transition of temperature in this variable climate. Let less clothes, and more "elbow grease," be the rule of your stable.

Were we to consider the use to which water is subservient in the regimen of the horse—that of softening and aiding the digestion of his food—I am sure we would all agree in condemning the system which custom—that bane to progress and improvement—has established; and instead of allowing him water morning and evening, give it to him before and after each feed, giving a full bucket in the morning, a few "go downs" after it; at mid-day a few "go downs" before and after; and in the evening half a bucket before and after his feed. This mode will assist in forming his food into a pulpy mass, for the more ready action of the gastric juice. In the present or common administration of water to the horse, it is all given before the food, passes out of the stomach into the large intestines, and when the food is eaten, the object for which nature intended the liquid to be taken is defeated by its absence.

The Grazing and Dairy Farms of Chester County.

The system of farming pursued in Chester County is a mixed one; it is both grain farming and grazing. For example, in this vicinity a farm of one hundred acres will, in most cases, be laid out into fields of about eight acres each, (some four or five acres being taken up by orchards, garden, buildings, and roads,) so that before harvest time there will be each year three fields, containing together some twenty-four acres in with grain, the remaining fields being in grass—of which, perhaps, three fields will be for hay, and three or four will be retained for pasture. This is the course pursued both on grazing and dairy farms; and it is plain that on all such farms, where the stock are kept in the stable or yard during the winter months, a course of mixed farming, somewhat similar to what is here pointed out, must be pursued. In all the Northern ports of the United States the winters are so severe and of such duration that a great part of the labor of farming is expended in laying up necessary provender for the winter stock; hence the necessity of having mowing fields and fodder and grain. Since our farmers have adopted a regular system of rotation, say for fifty years past, the sod is broken up to be planted with corn, and mostly without manure; the corn crop is followed by oats, also without manure; and the oats is followed by the wheat crop, usually planted in September, with

which also grass is sown, commonly timothy, and clover among the wheat early in the following spring. In preparing for wheat the field is manured from the barn-yard with the accumulations of droppings from the stock, and litter from the barn. On well-regulated farms, with the exception of lime and plaster, no other manure is applied, every thrifty farmer being dependent on his own barn-yard for his supplies.

But little hay or Indian-corn is sold from the farms of Chester, Lancaster, and the neighboring counties; and it is by pursuing this system that the farms of this section, naturally fertile, are maintained in their present condition. Experience shows that those farms which consume the largest amount of their own productions, not only increase in their productiveness, but also improve the prosperity of their occupants. The counties which surround Philadelphia are in the hands of a most industrious and skillful agricultural population, who are largely engaged in the business of grazing and dairying. The causes which have led this population into these branches of agriculture are—1st. The wants of the city. 2d. No doubt, the natural adaptation of the country and its soil to these pursuits. The soil is naturally well supplied with the mineral elements of fertility, which it yields readily to the mode of cultivation practiced, and the country being well watered, and at the same time having a salubrious climate, the people have fallen into occupations which nature has pointed out.

A farmer here, on a good farm of one hundred acres, will lay in twenty head of steers to fatten for the market, as well as twenty to thirty sheep, besides his necessary number of working oxen, horses, and also his hogs. He will have from five to six hundred bushels of corn, four hundred bushels of oats, besides his hay, corn fodder and chaff; his wheat, except what is required for family use, is sold, the straw and chaff being reserved. All of these, with the greater part of his potato and root crop, will be consumed on his premises, in his own stables and barn-yard, and the resulting manure goes back each season upon some one field, and that for his wheat crop. Whether the farm is applied for grazing or the dairy, the above is about the practice pursued on the best farms, and with the most skillful farmers. Now even if the grass and the corn and the oats do abstract from the soil the phosphates, these phosphates all go back in the manure, excepting what are carried away in the wheat and by the growing and fattening stock, or by the dairy produce. The manure, besides phosphates and mineral matters supplied by the soil, contains the nitrogenous compounds which are found in the droppings of the animals, compounds which have come but in small part from the consumed crops, but chiefly from the excreta of the animals, and which have been eliminated by them in great part from the constituents of the atmosphere and from the water they drink; hence we see that those farms upon which a large number of fattening stock are fed improve in fertility and agricultural value; they become more fertile and capable of sustaining increased numbers of cattle, notwithstanding that they annually lose, in the substance of the animals fed, many hundreds of pounds of phosphates. How, then, is the necessary supply of phosphates and other essentials to fertility furnished? It is from the soil, or, rather, from the rocks, (geologically speaking,) which compose it. These, under a proper system of cultivation, acted upon by the air and by the nitrogenous barn-yard manures, are continually being decomposed and rendered more and more soluble and available to the plant.

Pasture fields, year after year, yield to cattle immense quantities of mineral matter, and yet do not become exhausted. Mowing fields yield in hay likewise these mineral matters, and it is generally supposed that they become impoverished quicker than pasture fields, because their product of hay is carried away and with it much of the mineral and other valuable constituents of the soil; this, however, is only apparent, for the mowing field in the course of rotation receives back, as its quota of manure, the proceeds from the complete rotation of crops, made during the year in the barn-yard; and the grazing field of old grass has gone through the same system of cropping of grain and hay, followed up in most cases by having a long series of years appropriated to pasturage or grazing. These old pasture fields, too, are found by experience to accumulate great stores of such fertile constituents as are sure to produce large crops of Indian-corn and oats. In mowing fields the grass suffers damage from being suddenly exposed, by the removal of t crop, to the burning rays of the midsummer sun, and to the effects of drying winds; but in soils natural to green grass, if the field has been properly tilled, this grass soon takes possession, and the deposits into the soil of nitrogenous and carbonaceous matter continue.

Now where, under this system of farming, the land is not overtaxed by having too large a stock, the hay, grain, straw, and fodder being consumed on the place and the resulting manure returned, the farm is found to become richer and more and more productive, because the action of

the manure from high-fed cattle is found to induce the rapid decomposition of the basis of the soil, and to free the phosphates in quantity larger than the amount removed by the animals which go off the place.—*Rural Economist.*

To Select Edible Mushrooms.

In consequence of the death of five officers, caused by eating poisonous *fungi*, the French Army Board have had the following published:

Fungi afford man an agreeable and nourishing food, and therefore, in some provinces of France, they are consumed to a great extent. The soldiers seek them, but they confound, unfortunately very often, the poisonous fungi with edible ones, and thus expose themselves to the gravest accidents. It is important, therefore, that they should be taught, as far as science is able, by simple characters, to distinguish the wholesome from the injurious species, and at the same time be made acquainted with the proper means to combat the poisoning. It is with this view that the Board of Health have drawn out the present instruction.

1. *Distinctive characters of Edible and Poisonous Fungi.*—Some general characters will enable us in most cases to distinguish edible from poisonous fungi. Thus, edible fungi grow usually in elevated and airy places, in waste ground, whilst the dangerous species are found in woods and in dark damp places. The edible species have a compact, brittle flesh, while those with a soft and watery flesh should always be rejected.

Wholesome fungi have an agreeable odor, although this character is also found in some injurious species. A powerful and disagreeable odor is the certain indication of noxious qualities.

We ought at once to reject fungi which secrete a milky juice, and those which present an acrid, astringent, bitter, acid, or salt taste.

We should suspect fungi which have a bright tint, red, green, or blue, of which the gills are colored brown or blue. The flesh of the edible species is in general white; nevertheless, a beautiful red fungus, the *orange agaric*, is considered as the finest and most delicate species. Wholesome fungi do not change color by contact with the air after being cut; those of which the flesh then acquires a brown, green, or blue tint, are poisonous. We ought to regard as dangerous those which insects will not touch.

It is proper to abstain from fungi, whatever may be their apparent qualities, when they have attained their full development; when they exhibit any signs of change; when even they have been collected more than twenty-four hours—the poisonous properties being capable of development when the fungus grows old or dries up.

We thus see that the negative characters have more value than the positive ones; and in rigorously applying the rules which we have now made known, we should undoubtedly throw aside some edible species, an error which is not detrimental, but we should be certain to reject all those species which could act injuriously.

It is important to be cautioned against the widely-spread notion, that it is easy to distinguish wholesome from noxious fungi by submitting them to such tests as the following:—

If we apply a silver piece or plate upon a poisonous fungus, it is blackened; in cooking them with white onions these will blacken, if the fungus is of a poisonous nature.

These tests have no value, and the absence of the above indications proves nothing in favor of the good quality of fungi.

In *resume*, we see that science does not afford us any certain character which absolutely establishes a clear line of distinction between edible fungi and those which are poisonous to a greater or lesser degree. It is better for us to abstain altogether from them, when there exists the slightest doubt of their quality.

2. *Preparation of Fungi.*—When we are about to use fungi of which there is the slightest doubt as to their quality, it is important before their preparation to wash them thoroughly with water acidulated with vinegar. For that purpose they should be cut into slices, and left to macerate for an hour in the vinegar and water, composed of a litre of the latter to three spoonfulls of the former. They should be afterwards washed with boiling water, and then cooked. The result of experience is, that the most dangerous fungi lose their poisonous properties when they have been previously treated with vinegar and water. But it is difficult to determine the moment when the poisonous principle is thus carried away.

3. *Symptoms of Poisoning by Fungi.*—The symptoms indicating this poisoning vary according to the species of fungi which have been taken, the quantity consumed, and their mode of preparation. Their action is manifested generally by vertigo, nausea, vomiting, gastralgic and intestinal pains, which very soon become continuous, and assume a great intensity. There is much thirst. Blackish, mucous, and bloody stools, accompanied by tenesmus, are frequently added to these first symptoms. We observe commonly cold perspirations, partial or general convulsions, and coldness of the extremities. The pulse gradually becomes weakened. It is followed

sometimes by delirium, either alone or alternating with coma; at other times the intellect remains perfectly clear. Strength decreases, the cheeks become sunken, the stomach retracted, the body assumes at times a bluish hue, and death ordinarily takes place at the end of two or three days.

The series of these grave accidents are not developed till seven, eight, or ten hours after the repast, when the process of digestion is finished, and the poison has been carried into the circulation. It is important, then, when we observe vomiting of a suspicious nature, to inform one's self not only of the food taken at the last repast, but also of that at the one which preceded it.

4. *Treatment of Poisoning by Fungi.*—The first indication to fulfil, at whatever period one is called, is, to assist the evacuation of the fungi by the aid of an emetic and purgative administered at the same time. For this purpose dissolve in half a *litre* of hot water, twenty-five *centigrammes* of the emetic, and twenty *grammes* of sulphate of soda or magnesia; then administer this solution in lukewarm portions to the patient, and tickle the back of the throat with the finger or with the barbs of a feather.

When it is suspected that a portion of the poisonous principle has arrived in the intestines, it is desirable to assist the action of the above medicines by the administration of purgative injections.

Experience has demonstrated how important it is to continue the use of these remedies for a long time, even when we believe the digestive organs to be entirely cleared of the poison.

Tannin dissolved in milk and water is recommended at all periods of the poisoning concurrently with the emetics, but especially after the employment of them has ceased. We can replace milk by white of eggs beaten up and mixed with emollient drink or even with water.

After the complete expulsion of the poison it is expedient to employ mucilaginous demulcent medicines, ether draughts, emollient fomentations, baths, and, generally, all means should be adopted to ease the pain and subdue the inflammation.

External revulsives, such as mustard poultices, stimulating embrocations upon the members and trunk, &c., are means which it is necessary not to neglect whilst the reaction is incomplete, and they should be continued energetically.—*Extract from a Memoir by Drs. Lallemant and Chevrel.—Journal de Pharmacie et de Chimie*, November, 1860.

☞If you would have your cattle come out well in the spring, see that they are well housed in the winter.

On the Deleterious Effect of Light on Potatoes.

The influence of light on vegetation is now regarded as a matter of the utmost importance, and although the precise mode of action may not be always understood, yet powerful effects of it are everywhere perceptible. In its absence leaves become blanched that would otherwise be green; roots that are white underground become green when exposed. Turnips, white beneath, are green, or perhaps red, above, and many kinds of fruits, naturally pale, color under bright sunlight. By the action of light on leaves, the different secretions peculiar to plants are formed, such as gum, sugar, starch, oils, and even in certain kinds of plants, deadly poisons. In some plants, too, the secretions due to the action of light are in certain portions harmless and nutritious, while in other parts of the same plant, through the same agency, highly deleterious principles are formed. The potato offers an example. Everybody knows that its tubers contain wholesome food, and it is generally known that the stems, and especially the apples or seed-vessels, are deleterious. But the treatment to which the potato is sometines subjected is calculated to develop the poisonous quality in the tubers themselves, a change which can only take place on exposure to light. The poison found in the green parts of potatoes is called solanine. This exists in several species of solanum, "and is found in considerable quantity in the roots of potatoes. To obtain it, the roots are bruised and acted on by water acidulated with sulphuric acid. It is very poisonous." (*Turner's Elements of Chemistry.*) Liebig says it is a powerful poison.

Although the stems of potatoes, according to the authorities just quoted, contain, in notable quantity, the noxious and easily extracted principle, so dangerous in its concentrated form, yet the tubers grown underground and kept in the dark are floury and white when cooked, if the variety of potato is good, and quite free from acrid taste, which is one of the characteristics of solanine, and a true indication of its presence. But the potato tuber is in reality a sort of stem, for it is furnished with buds, which, under favorable circumstances, push into shoots, as buds do on stems above ground. It is, therefore, highly susceptible to the influence of light, for although both the skin and flesh are white, they soon become green on exposure, and the continued presence of light renders them as green as stems above ground. It is said that pigs have been killed by giving them potatoes greened to this extent. Such, of course, would not be sold for

human food. For this purpose, potatoes exposed to light must be housed or otherwise shaded, before the green tinge is apparent, at least to the naked eye. But, under the impression that the tubers keep better after having been well basked in the sun, many cultivators are in the habit of turning them up and spreading them out on the surface of the ground in bright, sunny weather. This has the effect of greatly deteriorating their quality. Notwithstanding disease, really good potatoes can be found; but even slightly diseased ones, with the infected portions cut away, are infinitely better than quantities of others which, though they have a goodly appearance, have been greened. Instead of being white and floury when cooked, they are yellow, and have a disagreeable, acrid taste, which can scarcely be disguised, or if it should, there is no proof that the deleterious effects of the acrid principle are counteracted. At all events, it would certainly be very desirable that such means should be adopted as would prevent that principle being generated; or, in other words, the tubers should be kept as much as possible in the dark instead of exposing them to light. The advantage of exposure as regards better keeping is doubtful, whereas the deterioration it occasions in the quality of the tubers, as an article of food, is certain. I have thus endeavored to draw attention to the subject, and it is the duty of every one who is aware of the deleterious effect of light on the potato to explain it to those who are not; for a knowledge of it, if acted upon, would prove beneficial to both rich and poor.—*The Gardener's Chronicle.*

Cranberries on High Land.

For several years past, we have been attempting to raise cranberries on high land. Our first attempt was upon a dry, sandy loam land, that had been allowed to mature the seeds of a variety of weeds indefinitely before the land came into our possession. The plants grew well enough on this soil, but the incessant pulling of weeds so often disturbed the young "runners," that they did not have time to get a firm hold of the soil, and of course did not succeed well. This experiment was continued two or three years, and then abandoned. The next attempt was upon a piece of underdrained "swale" land; that is, land such as we have all over New England, bordering on meadows, or the low "runs" among the uplands. The piece we selected was of the latter description, where the surplus water found its way out from a series of gently swelling hills. It would have been good corn land in a moderately dry season. The water, however, before it was drained, remained in it late enough in the spring to cause it to send up rushes, and in some places, flags, and a variety of rank meadow grasses. This was its condition when selected for cranberries. Six months later it was thoroughly drained by the use of tile laid four feet deep, which resulted in bringing in timothy and red top, without the aid of ploughing or adding seed —on three sides of the piece there being a stout growth of both these grasses.

The process was to cover the rushes and meadow grass with coarse gravel, so that none of it could be seen. A little fine meadow muck, say fifteen bushels to the rod, was spread over the gravel, and the plants set about one foot apart in each direction. The plants were taken from a common cranberry meadow, and set from the middle to the last of April. The only thing done to them since has been to keep out all weeds and grass that have made their appearance; and this must be done with care, so as not to disturb the sod or plant, which was originally set, or the "runners" which have started out from it.

On the single rod where the plants have been set three years, in the first week in September, we gathered *one bushel of cranberries*, and we have seen but a single lot in market that compares with them in size. On a rod set two years, eight quarts were gathered. These amounts were in clean, sound cranberries, with probably not an imperfect one among them, as they were gathered by hand.

A cranberry patch has a value beside that found in its fruit, as there is scarcely anything more ornamental in the vicinity of the dwelling. The plants have a dark, but brilliant green, in the spring and early summer, and when in blossom, at a little distance, present the appearance of a slight fall of snow upon them—and on a nearer approach, the delicate line of pink on the blossom gives them a very beautiful appearance. They remain in this condition for more than two weeks. In the autumn, when the leaves have matured, they present various shades of red, and thus remain pleasant and inviting to the eye until snow covers them for the winter.

From observation and careful inquiry through several years, we are satisfied that not more than one family in ten in Massachusetts ever have a cranberry in the house. They are only common with a comparatively few. In our opinion, this ought not to be so, because we are convinced that their usefulness does not cease with the mere gratification of the taste. Physicians inform us

that they possess valuable medicinal qualities, which give tone and healthy action to the liver and kidneys, and favor the removal of vitiated matters which have become useless and injurious to the system.

The preparation of the cranberry for the table, requires a good deal of sugar, to be sure—but sugar is an exceedingly nutritious and healthy article when taken as a portion of the meal, and is undoubtedly, so far as economy is concerned, cheaper than meat.

We hope others will try the experiment of raising the cranberry on high land, so as to establish the fact that such culture is feasible, and that all our people may then have cranberries at hand for their pies and tarts, and as a condiment for their roasted turkey on Thanksgiving Day, or for their roasted mutton, when they are so fortunate as to have it.—*New England Farmer.*

HOUSEKEEPERS' COLUMN.

We are indebted for the following to a lady friend on the Eastern Shore, who we know to be one of the best of housekeepers.

Recipe for Candles.—Take of alum, 5 lbs.; dissolve entirely in 10 gallons of water; bring the solution to the boiling point, and add 20 lbs. tallow, boiling the whole for an hour, skimming constantly. Upon cooling a little, strain through thick muslin or flannel; set aside for a day or two for the tallow to harden; take it from the vessel, lay aside for an hour or so for the water to drip from it, then heat in a clean vessel, sufficiently to mould; when moulded, if you desire to bleach them, lay upon a plank by a window, turning every two or three days. Candles made strictly by the above recipe will burn with a brilliancy equal to the best adamantine, and fully as long.

For Making Lard.—Cut the fat up into pieces about two inches square; fill a vessel holding about 3 gallons with the pieces; put in a pint of boiled lye made from oak or hickory ashes, and strained before using; boil gently, over a slow fire, until the cracklings have turned brown; strain and set aside to cool. By the above process you will get more lard, a better article, and whiter than by any other process.

For Making Soap without Grease.—1 bar of common rosin soap, 1 lb. sal soda, 1 oz. borax—dissolve the soda and borax in 8 pints of rain or soft water; then add the soap, and boil until dissolved, when you will have, upon cooling, 10 lbs. of *good* soap, worth from 8 to 10 cents a pound, and costing only 1 cent per pound.

Cheap Soap.—6 lbs. sal soda, 4 lbs. lime, 4 gallons water; mix thoroughly; heat, but not to boiling, until the soda is dissolved—then after the undissolved portion of the lime has settled, draw off the clear liquid; to 7½ lbs. grease, previously heat to melting, add the liquid by degrees, bringing to a boil upon the first addition; continue the boiling for 1½ hours, then add ½ a pint of common salt, and boil 15 minutes; set aside to harden. For complete success with the above, great care must be observed in drawing off the water from the undissolved lime, as the slightest quantity of lime in the soap will render it liable to crumble.

Recipes for Curing Hams.

As the season for curing our bacon is at hand, we give several of the best recipes we have published in past years. The reader will hardly go amiss in adopting either of them.

No. 1. For pickling one hundred pounds o Pork, Hams, Beef, &c.:

Take six gallons of water, nine pounds of salt, (half coarse and half fine, mixed,) three pounds of brown sugar, one quart of molasses, three ounces of saltpetre, and one ounce of potash. Boil and skim it well and let it stand till entirely cold; then having rubbed your meat with fine salt, pour this brine over it and let it stand six weeks; then hang up to smoke.

No. 2. 8 lbs. of salt, 2 oz. saltpetre, 1½ oz. potash, 2 lbs. of brown sugar, or a quart of molasses, 1 oz. of red pepper. These ingredients dissolved in five gallons of water, constitute a brine which should be poured over 100 lbs. of hams, already packed and closely fitted in a water-tight cask—the hams having been previously rubbed with salt and thoroughly aired, two days before being put into the cask.

After immersion from four to six weeks, (according to size,) they should be hung up by the skin of the shank, and when smoked sufficiently, covered with paper and put into bags and hung hock downwards; all to be done before the warm days of March.

No. 3. To a thousand pounds of meat put three pecks of fine Liverpool salt and four pounds of saltpetre. Pack in a cask, the bottom of which must be perforated to allow the bloody water to drip away. Let it remain three weeks, then hang and make a smoke every morning of green hickory—the fire so placed that the smoke may cool before reaching the meat. Sow up in canvas bags before the last of February.

The American Farmer.

Baltimore, December 1, 1861.

TERMS OF THE AMERICAN FARMER.

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W. B. WORTHINGTON. THOS. B. LEWIS.

WORTHINGTON & LEWIS,

Publishers of the "American Farmer,"

BALTIMORE, MD., and RICHMOND, VA.

Good Butter in Winter.

The difficulty encountered in making good butter in winter, deters many persons from attempting it, and when the trial is made the very inferior snowy looking result is anything but tempting to a cultivated taste. We can but think a little good judgment and care may correct this, and give us a good rich butter, sufficiently colored, without the use of foreign matter to tempt us to eat it.

1st. The cow should be a good one, and she should be kept in every way comfortable. Let her have some exercise in all good weather; give her a close stable in very bad weather, but a shed open to the South whenever the sun shines; sunshine and free air are two very wholesome things in our opinion. Let her neither lie down nor stand upon the wet ground, nor upon filthy litter of any sort. Keep her skin and hair in good condition, by at least one thorough brushing daily; and her bag, of course, washed before each milking with cold water, and well dried with a cloth. The cow is the very lady of the animal creation, and should not only be well provided for, but treated always with consideration and the utmost gentleness.

2nd. As to food, we should say the very best would be corn fodder, say twenty pounds a day—yellow corn meal, half a peck a day, and half a bushel of sugar beet. Well cured clover hay ranks next to corn fodder; double the quantity of bran may take the place of meal, and mangold wurtzel, or ruta-baga to be substituted for the beet. This food would doubtless be better for being prepared by steaming. At any rate the roots should not be given to her half frozen, and the meal should be made into slops and given a little warm. Let her drink no ice water, but all the water she may want directly from spring or pump.

3rd. As to the management of the milk, scald it by sitting on the stove and raising it to a temperature of eighty degrees; stir it while heating: after scalding set it in a room where the temperature will not fall below sixty. Let it set twenty-four hours before skimming; keep the cream the same temperature until churned. This constitutes, we believe, about all the peculiarities of winter management. The same after care as at other times, will give us, we think, good butter. Take notice, however, that it is the easiest matter in the world to spoil good butter by keeping the cream or butter in an atmosphere impregnated with any impurity or unpleasant odor, and that absolute cleanliness as well as freedom from the various cooking odors must be secured.

The Health of Animals.

The diseases of domestic animals are almost, without exception, the result of domestication. We have reason to suppose that wild animals suffer very little from such diseases as we are familiar with among those subjected to our control; for even these when allowed a large liberty to roam in fields, and freedom to choose their own resting places are very rarely troubled with sickness. It is only when we take them under our especial care, put them into warm stables, allot to them choice food, and make especial efforts for their comfort, that our blundering kindness kills them.

Now let us be sure that, though cattle quite exposed to the coldest weather are usually thrifty and healthy, if they have food enough, and are often otherwise in warm stables, it is not that cold is good for them, or warmth hurtful. It is that with the cold they have good, fresh, wholesome air to breathe, and with the warmth they have bad, poisoned air. This, without question, is the main source of disease, and all our tender cares are worse than useless, if in making them comfortable we deprive them of pure air. It especially becomes us now that we are going into winter quarters, to give this matter our consideration, remembering that cold is better for the health than warmth, if this can only be had in connection with impure air. There is no necessary connection, however, between comfort and uncleanliness. Make your animals comfortable, but, beyond everything, ensure them the amplest supply of that cheap commodity—*pure, clean air.*

Inspection of Fertilizers.

We beg the attention of the newly elected Legislature to the subject of a proper inspection of the numerous fertilizers offered for sale in the Baltimore market. There is no matter more important than this to the material interests of the agricultural community trading, under ordinary circumstances, with Baltimore. The trade is of little account now, but on the restoration of the city to her true position as the great Southern mart, it will, we trust, revive with renewed impetus. There can be no more favorable season than the present to have our inspection law thoroughly overhauled, and a stringent one to take its place, which shall embrace all the fertilizers offered for sale. Under the present circumstances enormous frauds may be and have been perpetrated, which the farmers have little power to guard against.

☞ We need not, we think, apologize to our readers for the space occupied by the article on the Chemical and Physiological Investigation of the Food Question. While we avoid, usually, very long articles, we are unwilling to spoil one so interesting and valuable, by cutting it up. It will be found to be a very lucid exposition of the philosophy of food, as well in its physiological as its chemical aspect, and its reproduction on our pages will well repay the intelligent reader a whole year's subscription to the *Farmer*.

The physiological view of the food question as presented here, is not without application to the subject of fertilizers. It was a grave error, to which we frequently directed the attention of our readers, which made chemistry all-sufficient to indicate either the value of a fertilizer or the necessities of a soil which we proposed to enrich. Analogy will direct attention to other "forces" which must always modify the action of fertilizers. Chief of these is the mysterious "life power;" the vital energy, of which we know almost nothing, and without the consideration of which, all that we know else is almost as nothing.

The Price of Grain.

There is every reason to suppose from present indications, that the prices of breadstuffs will be fully maintained, if they do not largely advance. From the most reliable sources of information abroad, it is well ascertained that the deficiency to be supplied from this country will probably be double that of last year, while our ability to supply it is perhaps much diminished.

The wants of France alone are estimated for the year's supply at 40,000,000 bushels. Some of the minor grain growing countries, as Portugal and Italy, will require imports; and the crops of Northern Europe are not large. In England the crop is put at 10 *per cent.* below the usual average, with "enormous waste in the fields, from being over-dry at harvest." There is compensation for this, however, in the superior character of the crop in its bread making qualities. Scotland has had a defective and protracted harvest. In Ireland, while England has been enjoying sunshine, there has been a deluge of rain. "All the corn is damp, and the potato crop worse than any year since the famine."—There are already, indications of great distress in that country from the loss of the potato crop, accompanied as it is with scarcity of fuel, caused by the impossibility of drying the turf which is used for the purpose. When it is remembered that with an average crop, Britain requires 25,000,000 to 30,000,000 bushels of foreign grain, and that last year she took from us 50,000,000 bushels—38,000,000 wheat, in flour and grain, and 12,000,000 Indian corn—we may well suppose that during the coming year there will be active demand, at full prices, for all the grain we may have to spare. Especially is this probable, since it is found that the early reports of the Western wheat crop were much exaggerated, and that there has been great loss in the field by continued rains. Our home demands, too, will be larger than ever before, owing to the inevitable waste in the consumption of our enormous armies.

Weeds—The Daisy or White Weed.

Among the intruders which come unbidden into our fields, there is scarcely one in Maryland so objectionable as this white weed, variously known as "white daisy," "Carolina pink," &c. There is not a weed known to us here perhaps, that holds on so pertinaciously and so defies all ordinary methods of destruction. It propagates rapidly, both by seed and roots, and the very method used to destroy seems sometimes to increase it ten-fold. If torn up by the roots, every rootlet left behind forms a new plant. If cut off in the flower, numerous side shoots spring up and bloom and seed later in the season. The consequence is that many grass and pasture fields we have seen, are completely overrun with this pest, and it is spreading rapidly into sections where heretofore it has been a stranger. Let us caution our readers against its inroads, and warn them to meet it on its first approach.

A correspondent of the *Country Gentleman*, who says he has successfully met its approaches while his neighbors are overrun, gives the follow-

ing as his treatment. "My practice has been, every year, to go over those portions of my farm where the daisy is likely to be found, at the time the plant is in bloom, and to pluck up by the root every daisy that I can find. This operation is performed several times each year, always being careful that every daisy that is found is *pulled up, root and branch*—be sure it is *pulled* up, not broken off, as in that case it will grow again, and the labor is comparativeiy lost."

Caution about Seed Corn.

We observe this season an unusual quantity of corn sprouting on the ear. It will be remembered that some seasons back there was immense loss to corn growers by the failure of their seed to germinate. They should look carefully to this matter now, and select their dryest corn, and such as has been least affected by the weather. We have seen many ears of corn just from the shock, the germ of which has started and pushed its way through the body of the grain, sometimes making half an inch of growth and again scarcely perceptible by a green speck on the surface. When one such grain is apparent, a great many may be started but not yet visible, and almost the whole ear may be unfitted for seed. This occurs with ears otherwise perfectly fair and sound, and much loss may result if care be not used in selection.

To the Editor of the American Farmer:

When you did me the pleasure to visit my garden last summer, I think I promised to give you a statement of the proceeds. I consider this is below a fair estimate. The grapes were sold considerably lower, owing to the troublesome times, yet it gives some idea of what our poor land can be made to produce. The portion of my garden, eighty-five feet square, gives the following result, viz:

GRAPES.

763 pounds, at 10 cents	$76 30	
200 pounds, at 15 cents	30 00	
170 pounds, at 11 cents	18 70	
150 pounds, at 10 cents	15 00	
1283	$140 00	
42 quarts strawberries, at 10 cents		$ 4 20
58½ quarts gooseberries, at 25 cents		14 50
17½ quarts raspberries, at 20 cents		3 50
4 quarts red currants, at 8 cents		32
3 quarts black currants, at 8 cents		24
13 quarts white currants, at 8 cents		1 04
Rhubarb		1 00
		$ 24 80
Grapes		140 00
		$164 80

$164 80 for 85 feet square, is equal to $1081 25 per acre.

Labor for digging and hoeing was twelve dollars. Besides, my attention (which is a pleasure) will not amount to over half an hour per day during the season.

Your Friend, THOMAS BAYNES,
East Pratt street, Baltimore.

Good Stock.

In my last communication I think that I pretty cleary showed the disadvantages under which those farmers labor who content themselves with using tools and implements of an inferior quality. I shall now speak of the disadvantages and poor economy of keeping stock of an inferior quality.

Why is it that on so many of the farms throughout the country, farms of which no person need be ashamed, and which in most every particular except this one, show the unquestionable signs of good farming, *the stock exhibit the unmistakable evidence of neglect and inattention in breeding?* There is no doubt that it is generally the result either of carelessness, or that it arises from the mistaken idea often entertained by farmers, that "it will not pay" to devote more attention and expense to this branch of their business.

How very much mistaken are those who indulge in this idea, for that it will cost no more to keep a well-bred animal than one of an inferior quality is an undisputed fact, and very often it is the case that that breed of animals which is particularly distinguished for some excellent quality, consume less than those which are their decided inferiors. Hence it follows from this, that it is possible to keep more well-bred animals upon a certain quantity of food than those of an inferior quality.

Having thus proved that it is poor economy, in relation to the quantity of food consumed, to keep an inferior animal, I shall now speak of some of the other advantages which well-bred animals have over the inferior.

Take for example, two oxen, one of which is well-bred and well cared for, the other an ill-bred, ill cared for, inferior animal, and notice the vastly greater ease and celerity with which the former will do his work in comparison to the latter. In like manner take two cows and notice the difference in their quantity and quality of their milk. Also, in relation to fattening qualities, observe how much quicker and with what greater facility the well-bred animals may be fattened, and to what greater weights they may be brought than those which are inferior to them. But some may say that it is necessary, in order to obtain these well-bred animals, to invest more money than they care about doing. It is true that in some cases it is necessary to expend a certain amount,

but this when properly invested, will soon be repaid. But it often happens that it is not necessary to expend anything, for there are doubtless some of your neighbors who possess better bred males than yourself, and often by thus interchanging great benefits may ensue.

Such a method as this would benefit only those who raise their own breeding stock; but those who buy their stock and sell the young, generally run a risk of obtaining some inferior animals.—*Ger. Tel.* J. S., *Chester County.*

On Ergoted Grain.

Ergot is an affection of the seeds of many species of grass, including those which are cultivated under the common name of corn, by which they are converted into a hard, dark, spur-shaped body, generally much larger and longer than the seed, though sometimes, as in wheat, not differing very materially in size. Externally it is slightly rough, varying in tint from black or brown to purplish, with frequently a white mealy wash in parts, and at first, if not permanently, tipped with a little irregular scale-like process. When examined under the microscope it exhibits, on a section of this upper portion or the parts adjacent, little spore-like bodies seated on the tips of short straight threads vertical to the surface of the mass, which are supposed to have the office of impregnation, while within it consists of a white cellular mass rich in oil globules.

Such is the condition of the plant in the season in which it is produced, or till it has remained for some time on the ground, or is lightly covered with soil after the lapse of some months in a common garden-pot. A very curious change then takes place. A little pin-shaped purplish fungus sprouts in greater or less quantity from the sides, the head of which is studded with little receptacles containing linear transparent sacs filled with thread-like sporidia.

The ergot, then, as generally known, is merely a transitional form, or rather the first stage in the existence of the fungus, ending with the production of minute bodies, which are either reproductive, or, as is more probable, serve for the impregnation of the perfect fungus.

The grains of a large variety of grasses are subject to become ergoted, and ergoted grains have also been observed in the genus Eleocharis, which belongs to the order Cyperaceæ. Amongst the grasses, besides the cereals rye, wheat and barley, may be mentioned couch-grass, darnel, rye grass, cock's-foot, foxtail and reed. The ergot of the reed, and blue melic (*Molinia cærulea*) so common in moors, does not produce the same fungus as that of the other grasses just mentioned, and that again which springs from the ergot of the Eleocharis is specifically distinct. The seeds of the common reed are peculiarly subject to ergot, and the heads of flowers when blown off by the wind lie upon the damp soil for some months before the ergot is properly developed. The fungus of this ergot may be raised artificially by placing the head under damp sand covered with moss, or if they are placed with the stalks constantly immersed in water, the ergot will in time produce its fungus. If any of our readers wish to see the ergot of rye, barley, or wheat developed, they have only to cover them slightly with soil about the month of April, keeping it moderately moist with rain water, and they will be pretty sure to have a crop. And they will raise exactly the same fungus from the ergot of rye-grass, except that in proportion to the size of the ergoted grain, the resulting fungus will vary in size and number.

The reproductive bodies of this fungus are extremely minute, and, as said above, appear under the form of very slender threads, which may be wafted by the wind and carried to the young spikes of corn or grass. The development of these bodies has not been observed. The first indication, however, of the disease is, the presence of a thick, sweet, honey-like, colorless matter upon the spikes, which is filled with granules, resembling somewhat those of yeast; and it is supposed that the grain becomes ergoted in consequence of their presence. This was supposed by Quekett to be the perfect fungus, and was called by him *Ergotetia abortifaciens*, the ergot being supposed to be merely a diseased condition of the grains induced by the fungus. The granules which appear at the upper part of the fungus must be distinguished. They differ in form, and probably have the function of impregnation, though this scarcely admits of proof.—*Gardeners' Chronicle.*

To Stop Bleeding.—Asa Kemper, Ross Co., O., writes to the *American Agriculturist*, that bleeding from a wound on man or beast may be stopped by a mixture of wheat flour and common salt, in equal parts, bound on with a cloth. If the bleeding be profuse, use a large quantity, say from one to three pints. It may be left on for hours, or even days, if necessary. In this manner he saved the life of a horse which was bleeding from a wounded artery; the bleeding ceased in five minutes after the application. It was left on three days, when it worked loose, was easily removed, and the wound soon healed.

Meteorological Observations *kept at Schellman Hills, Carroll Co., Md., Sykesville P. O.,* OCTOBER, 1861. (*Reported for the American Farmer.*)

DAY	THERMOMETER.				WIND.			RAIN	REMARKS.
	7 A. M.	2 P. M.	9 P. M.	D'y Mean.	7 A. M.	2 P. M.	9 P. M.	Inch's	
1	48	65	56	57	S.W.	S.E.	S.E.	..	Clear.
2	60	67	65	64	S.E.	S.W.	S.W.	¼	Fog; rain began 11 A. M.; ended 3 P. M.;
3	61	75	67	67⅝	S.W.	W.	W.	..	Clear. [clear.
4	58	80	72	70	N.W.	S.	S.	..	Clear.
5	67	82	75	74⅝	S.	W.	S.W.	..	Clear.
6	70	84	78	77½	S.W.	S.W.	S.	..	Clear.
7	70	74	64	69½	N.W.	N.E.	W.	..	Cloudy; began to rain 6 P. M.
8	55	60	54	56½	N.	W.	N.W.	1	Ended 7 A. M.; cloudy; clear.
9	50	62	56	56	N.E.	N.E.	N.E.	..	Cloudy.
10	55	56	55	55½	N.E.	N.E.	N.E.	¼	Cloudy; rain began 1½ P. M.; ended in the
11	58	70	61	62½	S.W.	S.	S.	..	Cloudy; clear. [night.
12	49	61	53	54½	N.W.	W.	W.	..	Clear.
13	51	58	49	52⅝	N.W.	W.	W.	..	Clear.
14	45	64	55	54½	W.	W.	S.	..	Clear.
15	50	73	62	61⅝	W.	W.	W.	..	Clear.
16	51	68	59	58⅝	S.W.	S.E.	S.E.	..	Clear; cloudy.
17	59	69	66	64⅝	S.E.	S.E.	S.E.	1¼	Fog; cloudy; rain began 8 P. M.; ended in
18	66	74	68	69½	S.E.	S W.	S.	..	Cloudy; clear. [the night.
19	64	74	68	68⅝	S.	S.E.	S.	..	Fog; clear.
20	55	61	52	56	N.W.	N.W.	N.W.	..	Clear.
21	45	56	49	48⅝	N.W.	E.	E.	..	Cloudy.
22	51	58	54	54½	N.E.	N.E.	S.E.	..	Cloudy; rain began 7 A. M.
23	55	57	44	52	S.W.	N.W.	W	¼	Cloudy; clear; ended 6 A. M.
24	43	50	35	42⅝	W.	W.	S.E.	..	Clear; frost. [thick.
25	37	53	45	45	N.W.	S.E.	S E.	..	Clear; cloudy; heavy frost; ice ¼ inch
26	47	60	55	54	E.	S.W.	E.	¼	Cloudy; began to rain 7 P. M.; ended in
27	47	55	41	47⅝	W.	N.W.	W.	..	Clear. [the night.
28	34	50	35	36½	N.W.	N.W.	N.W.	..	Frost; clear.
29	35	60	50	48½	W.	W.	W.	..	Clear.
30	45	60	50	51⅝	W.	S.W.	S.E.	..	Clear.
31	43	55	42	46⅝	W.	W.	W.	..	Clear.

Monthly Mean, 57 3-10. 3½ inches Water fell.

HARRIET M. BAER.

Management of Farm-Yard Manure.

The supplies of farm-yard manure being on most farms inadequate to maintain the fertility of the soil, it is an important question with every farmer how the supply is to be increased. But it is even more important to preserve the fertilizing elements which the manure contains previous to its application to the land than to augment the quantity. The majority of farmers, however, do not bestow sufficient care on the conservation of the fertilizing elements before the manure is spread on the fields to be fertilized. The preservation of these constituents is not simply a question of economical expenditure in the purchase of manures, but is one with which the profit or loss of the occupancy is intimately connected. Waste arises from several causes, the most common being a washing out of the soluble constituents from exposure, and the loss of the gaseous elements from fermentation, induced by placing the manure in heaps previous to applying it to the land.

Farm-yard manure varies considerably in composition, the variations depending upon the animals kept, the manner they are housed, the amount and character of the food consumed by them, the kind or quantity of straw used as litter, the period of the year the manure is made, and whether it is made and kept under cover or exposed. The amount of water in half decomposed manure is seldom less than 80 per cent. Some chemists have estimated it as low as 75 per cent., but this is below the quantity of moisture present in ordinary farm-yard manure. The moisture is derived partly from the vegetable substances, a portion is derived from the urine of the stock, and under ordinary conditions a part is due to the rain water absorbed.

On many farms the manure is not only exposed to the direct rain-fall, but the water which collects on the roofs of the buildings is allowed to saturate it. The consequence generally is that a considerable portion of the soluble elements are washed out of the manure, which liquid stream is usually allowed to escape to the nearest ditch, from a belief that it contains little fertilizing matter. The urine of animals generally contains nearly as much fertilizing matter as the excrement, and any liquid from the dung heap contains a portion of the urine. Apart from the urine present in the liquid, there are also present in a soluble state a portion of the fertilizing elements

which were in the excrements, and a portion which were in the straw used as litter. When it is considered that the liquid from byres, cattle courts, and manure heaps is generally nearly all lost, and that this liquid from the heap is not all rain water and melted snow, it should be evident that a considerable waste of the fertilizing elements in the farm-yard manure arises from the manner in which it is produced, collected, and kept previous to its being applied to the soil. Under ordinary circumstances, as to cultivation and climate, it is not requisite to form a tank to collect the liquid, but it is generally advisable to prevent the saturation of the manure in a court by placing roans along the eaves of the roofs. With such a provision to carry off the rain water, any direct fall of rain seldom washes out any of the fertilizing elements, the water being absorbed, and part of it afterwards being removed by evaporation. During certain periods of the year the amount of moisture removed by evaporation is very considerable. It has been frequently observed where cattle were kept in open courts, with sheds attached, that in spring the quantity of straw required to keep them comfortable was less than that required for the same number of cattle fed in covered boxes.

During the process of fermentation, a considerable portion of the constituents of farm-yard manure are driven off. When the manure is compressed by the treading of stock, fermentation proceeds much more slowly than when the manure has been thrown loosely together. When the fermentation proceeds slowly, moisture is the principal constituent which escapes; but when fermentation is active, with considerable heat, a portion of the nitrogenous element escapes generally in the form of ammonia. Beyond hastening the action of manure and destroying the vitality of the seeds of some weeds, there is nothing gained by fermenting manure in a heap. On the contrary, the organic fertilizing constituents are diminished in part, and the mechanical action of the manure necessarily impaired. It is advantageous to all soils, more particularly to argillaceous ones, to apply manures in a green state at certain seasons. The cultivator of the potato finds it advantageous to manure the land in autumn with farm-yard manure preparatory to the growing of the crop. So also the cultivator of the Swedish turnip and of the legumes. Experiments are much required to elucidate the action of fresh farm-yard manure in and on the soil during the winter. Some suppose that the constituents of plant life in the soil are rendered more accessible to plants by being made soluble by the presence of this manure in or spread on the surface of the soil, while others believe that by the presence of the slowly-decomposing manure ammonia is attracted from the atmosphere and retained in the soil ready to be taken up by the crop. The researches of Professor Thomas Way showed that ordinary soils have the power of retaining the constituents of plant life, although these are in a soluble state, until the growing plants assimilate these constituents during their growth.

Those who are familiar with the beneficial effects which arise from the spreading of farm-yard manure on the surface and allowing it to be exposed to the atmosphere for some months, know that the fertilizing action of the manure is more marked in the succeeding crop than if it had been applied during winter or spring after being fermented. The action may be partly mechanical, but it is now ascertained by the researches of chemists, that during the period of exposure the nitrogenous elements are increased in amount, being generally in the form of nitrates; the increase being regulated in part by the temperature of the atmosphere, the constituents of the manure, and perhaps also by the constituents of the soil.

By spreading fresh manure on pastures and meadows and after exposure for some months, collecting by horse rakes the manure not decomposed, a striking difference in the character of the herbage is the result. Doubtless, this is mainly owing to the constituents of the manures which have been washed into the soil during the period the manure was exposed. Still, there is some mechanical action arising from a covering of manure, for upon inspection the soil is found to be more open, and the roots of the plants more vigorous. The same mechanical action can be observed in stubble lands, particularly where the soil is argillaceous. The soil is not only more friable, and therefore more porous, but the color is partly changed, showing that the action of the atmosphere has been increased by the manurial covering.

Those who entertain opinions strongly in favor of fermenting manure in dunghills, previous to its being applied to the land, should undertake experiments by manuring portions of fields intended for green crops during the next two months—the same quantities of manure applied to the portions of the fields being placed in heaps for spring application to the same extent of land manured in autumn. The results will probably surprise the cultivator who has hitherto only applied fermented manure to the soil.

During the spring months it is generally found

to be advantageous to apply manure in a state of advanced decomposition, particularly where it is being applied to land intended to be immediately sown with the seed of the turnip; but during summer, autumn and winter it will generally be found profitable to apply manure direct from the cattle courts and dunghill, without any previous turning to induce fermentation.—*N. Brit. Agri.*

The Lady's Horse.

The bridle of a lady's horse should be a single rein curb—never a snaffle to be pulled upon—requiring the strength of a thread only to guide and direct the animal, and drawn only when the horse is required to be stopped; at all other times to be kept slightly in hand, or be permitted to lie gently on the arched neck of the beautiful creature, permitting him to look abroad upon things, and see the road that he is traveling; starting with a bound into a graceful canter at the slightest motion of the rein, or a natural trot at the leaning forward of the rider, without the use of whip or other incentive. On such a horse the female figure is properly developed and its beautiful proportions brought into action, with no longer the fear that the whole machine—horse, rider and all—would fall to pieces were the screws that hold it together to become loosened!

The paces of the lady's horse should be long, rather than short, that the rider may bend gracefully forward, and not be jerked backward at every step, in the most vulgar manner imaginable. A lady equestrian must never appear in a hurry; it is unbecoming and ungenteel, and shows plebeian blood; and many instances are on record, showing that a horse knows a gentleman or lady at sight, as well as most of us.

An English lady of rank and wealth, now in Egypt, writes home as follows: "I fear you may deem me rather boastful of my horsemanship, when I tell you that two Arab horses which threw their cavaliers did not throw me. The cause, however, was not in my skill, but in the very remarkable predilection these animals feel towards the weaker sex. Let the wildest and fiercest Arabian be mounted by a woman, and you will see him suddenly grow mild and gentle as a lamb. I have had plenty opportunities to make the experiment, and in my own stable there is a beautiful gray Arab which nobody but myself dare ride. He knows me, anticipates my wishes, and judiciously calculates the degree of fatigue I can bear without inconvenience. It is curious to see how he manages to quicken his pace without shaking me, and the different sort of steps he has invented to remedy contradictory purposes.

Horses being as liable to forgetfulness as other organized beings, my incomparable gray would allow his natural ambition to overcome his gallantry, and if another horse threatened to pass him, would start off with the speed of a whirlwind. Woe to me, if under such circumstances, I were to trust to the strength of my arm or the power of the bridle. I knew the gallant charger better. Leaving my hand loose, and abandoning all thoughts of compulsion, I would take to persuasion; pat him on the neck, call him by his name, beg him to be quiet, and deserve the piece of sugar waiting for him at home. Never did these gentle means fail. Instantly would he slacken his pace, prick up his ears as if fully comprehending his error, and come back to a soft amble, gently neighing, as if to crave pardon for his momentary offence."—*Field Notes.*

Why Horses Kick—Rarey's Method of Cure.

Kicking is the worst vice which horses are taught. Few men will deny the first part of the assertion, but some will doubt that the vice is the result of education, for, say they, does not the horse kick by natural instinct, as a protection against enemies?

Certainly he does, and if he is made to think (for horses do think) that every touch upon his flank and hindquarters, and every rattle he hears behind him, are from an enemy, he will let drive in the most natural manner. The character of a horse is established during the first four or five years of his life. If, through accident or design, a colt be alarmed from behind a few times, particularly if he receive a sudden blow, he will learn to expect danger from that quarter, and to ward it off with his heels; and the finer and more spirited his organization, the more likely he will be to acquire the vice.

For example, a young colt had become quite troublesome by entering neighboring fields, over dilapidated fences of his owner.

After repeated annoyance, and much vain expostulation, one of the aggrieved parties caught the colt while trespassing, fastened a tin pan to his tail, and turned him loose. Away went the frightened animal, plunging and kicking to get rid of the fearful enemy banging at his heels, and he nearly killed himself before breaking it loose. From that day he was a confirmed kicker; not a leaf could rustle in his rear, but his heels would fly like lightning, and he was harnessed and

driven only at the peril of life. Another colt was taught to kick while confined in the stable, his owner ignorantly trying to "break his spirit." This he did by belaboring with a cowhide, and yelling at the top of his voice. The horse was frightened into the belief that man was an enemy, and he acted accordingly, kicking at every one who did not terrify him into temporary submission. This was as sensible as the advice of an English horse breaker of the olden time: "If your horse does not stand still, or hesitates, then alrate (yell) with a terrible voyce, and beat him yourself with a good stick upon his head between his ears, and stick him in the spurring place, iii or iiii times together, with one legge after another as fast as your legges might walk; your legges must go like two bouncing beetles!"

In the training of the colt, too little attention is paid to educating the whole animal. He should be gently and continually handled, not only about the head and mouth, but from "end to end." First invite his affection by little presents of corn, or a few crumbs of bread. Having gained his confidence, smooth his neck, then gradually extend your attentions along his back, and down his flank, and so on, day by day, advancing a little at a time, until you may safely handle every part. In time he will learn to bear a smart slap upon the haunches without thought of retaliation, and when once he has learned this, he cannot be made to kick by any fair usage. The man who abuses a horse deserves a kick.

But can a confirmed kicker be cured? Rarey says yes, and if one can exercise Rarey's firmness, good sense, and *patience*, we believe he can make the worst kicker safe. We witnessed his treatment of a most dangerous mare, and the effects of the one lesson given seemed marvelous. He first applied the strap to the fore leg, then led her around upon three legs until the creature found she could not kick. He next threw her, and commenced handling her flank and hind quarters, at which she kicked violently. But she soon found that nothing resulted from it; nobody was hurt, frightened or angered, and in about fifteen minutes her intrepid conquerer lay down and placed her hind foot upon his head. When she was released he mounted and dismounted repeatedly, until she allowed him to sit quietly upon her haunches. Such lessons repeated half a dozen times or more, as the case might need, he said, would tame her hind quarters. Our advice is, first, don't teach your horse to kick; but if unfortunately you have been cheated in trade, and are the owner of a dangerous beast, don't try to cheat any one else; try the Rarey method thoroughly, or employ an experienced horseman to do it, and so make the best of a bad bargain. —*D. Farmer.*

Plant Small Trees.

Young America is in such haste to realize results, he can't wait for trees to grow in the natural way. He wants to transport huge sons of the forest into his new place by some sort of patent machinery, so as to make a grand show immediately. He has little idea of what constitutes a perfect vegetable structure, small or large; he knows little of the pleasure which comes from watching the steady development and growth of a small tree, from year to year. No, no, he wants to leap up to grand achievements at once; he wants a lot of big trees, and that's all, and that's enough for him.

We beg a little consideration for small trees. Go to the open field, or to the nursery, and select a good specimen of almost any good tree—say the beech, or maple, or tulip, or himlock. Take one or more of each, three or four feet high, that have branches well formed on each side. Save all the roots and fibres in digging them up, and in carrying them home don't bang them to pieces, root and branch, but treat them with the utmost tenderness. Prepare large holes, in rich soil, and set them out so they will grow vigorously. Clip the ends of the branches just a little, but do this so as to preserve the original symmetry.

Now watch these trees, from year to year. How healthy they look, in every limb and twig and leaf! How happy they look, shooting out their branches on every side, and dancing in every breeze! How graceful in every part, and as a whole! Can anything more completely fill one's eye! Small as they are, they are perfect in form, and plainly predict what they will be when full grown. Age will only enlarge their bulk, and bring them nearer the time of their decay. Is not "sweet sixteen" more charming than the wrinkled and toothless octogenarian?

He who sets out large trees is compelled to top off at least the lower branches, to enable the top ones to live. The roots are so mutilated in digging them up, that nearly all the branches have to be trimmed up and shortened in, to restore the balance of things. But such a tree, so marred in root and branch, is only half a tree. It is a fragment to which the lost parts can never be restored. Begin, then, with small trees. How they enjoy life! They will ere long outstrip the large stumps you set out at the same time. Set them on your lawn and pleasure ground. Throw away your pruning saw, and let them work ou

their own ideal. If you interfere at all, let it be only with your thumb and finger. Never fear their wanton ways. They will attain near to perfection, if you will only "let well alone."

Fruit Hints.

I have met with decided success in using tobacco stems as a preventive for the peach-borer. Frequent examinations since early last Spring, have revealed but one borer. I renew the supply of stems as often as I deem advisable, and find no injury to the roots from them. I have also acted on Miss Morris's hint relative to the application of saltpetre, alum, or salt, as special manures for the peach, and with promising results. I sprinkle them on the soil to within about a foot of the trunk of the tree.

My trees, which were inclined to be sickly and of puny growth, are now in splendid condition, and this season made very strong, healthy growth, and from summer pruning are sending out strong, thick branches, some sweeping nearly to the ground, affording complete protection to the trunk from the scorching sun.

Last season, I used Gishurst's compound for slugs on my pear and cherry trees. This season I have used nothing but whale oil soap, which I find quite as effectual and more beneficial to my trees, as it gives a healthy, bright color to the bark, and keeps the leaves fresh looking and free from spots. I apply it once a week or fortnight, as they may require, and the expense is but little more than that of common soap, costing here five to six and a quarter cents a pound. Instead of a syringe, I use a "dydropult," which has great forcing power, and its flexible tube renders it far superior to the syringe in application to the under-side of foliage.—*H. C. Van Tyne, in Hor.*

CHRYSANTHEMUMS.—This noble fall flower may be taken up and put into a large pot or tub, after its blossoms are expanded, if a little care is taken to retain as many of the fibres as possible; indeed, it easily retains a large mass of the roots and fibres, and if these are put into a pot or tub large enough to hold them entire, and watered well, the plant is enabled to stand the removal. Taken in, out of the reach of severe frosts, it will finish up its period of blooming, and reward its owner with flowers of different colors, for weeks after all other flowers have disappeared from the garden, and after its comrades, left out, are blackened with frost. Chrysanthemums seldom get half through blooming before they are cut off by frost and their beauty well repays the little trouble of lifting them.—*Valley Farmer.*

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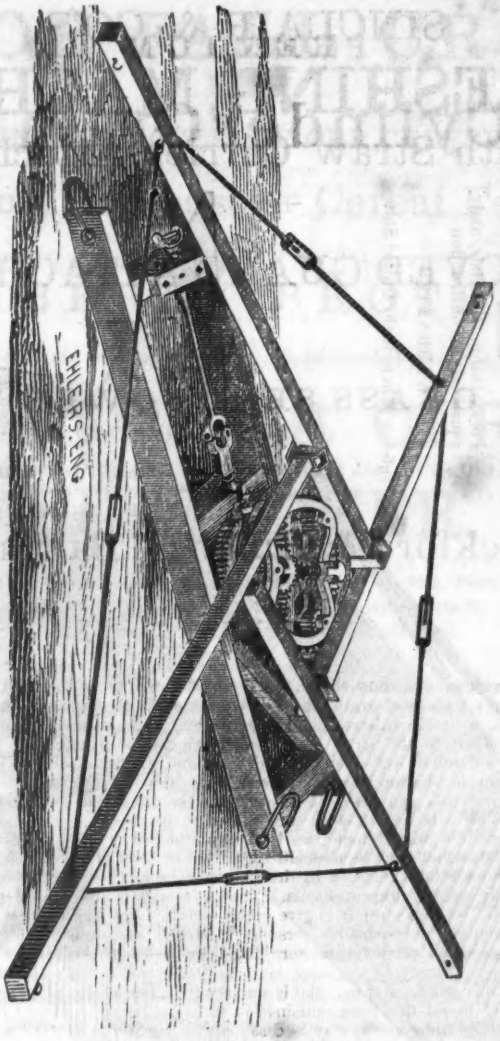

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"	" 2, " 6 or 8 "	80.00
"	" 2, Spur Gear, Horse Power,	110.00
"	" 3, " "	140.00
"	" 1, Bevel, Gear Power,	110.00
"	" 2, " "	125.00

For sale by

R. SINCLAIR, Jr., & CO.

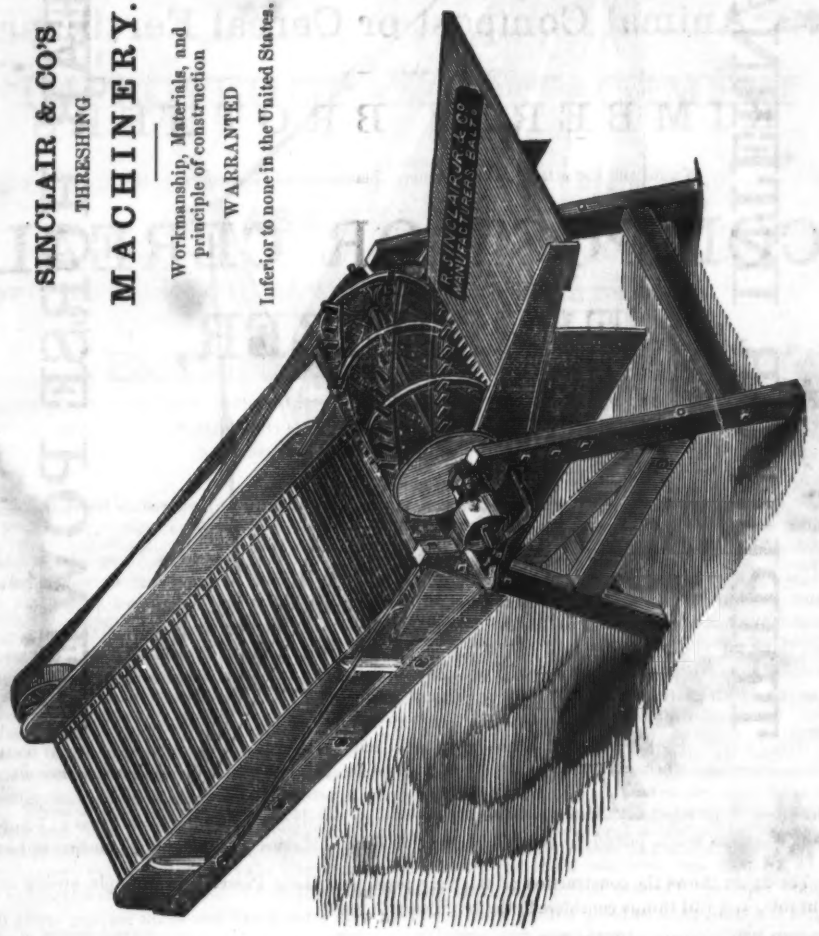
july

No. 62 LIGHT STREET, BALTIMORE.

SINCLAIR & CO'S
THRESHING MACHINE,
With Straw Carrier Attached.

SINCLAIR & CO'S
THRESHING
MACHINERY.

Workmanship, Materials, and principle of construction WARRANTED
Inferior to none in the United States.



Width of Cylinder,	16	20	25	30 inch.
Price complete for Parallel Cylinder,	$55	60	73	85
Price complete for Spiral Cylinder,	60	65	78	90

Ditto without Straw Carrier, $15, 18 *a* 20 less.

DRIVING BELTS, $12*a*18, as per length. HORSE REVOLVING and GLEANING RAKES. HARVEST TOOLS of every description.

For sale by

R. SINCLAIR, Jr. & CO.

july No. 62 LIGHT STREET, BALTIMORE.

☞FOR FALL CROPS.

CONTINUED SUCCESS OF OUR CELEBRATED

☞Animal Compost or Cereal Fertilizer.

KIMBERLY BROTHERS

Would ask the attention of Farmers, Planters and Gardeners, to their

COMPOST OR CEREAL FERTILIZER,

Composed entirely of Vegetable Matter, Blood, Bones, Cracklins, Fish, Flesh of Animals, Refuse from Soap Kettles, such as old Bacon, Grease, &c., together with No. 1 Peruvian and Phosphatic Guanoes, to bring it to standard.

We have of the above valuable Fertilizer about two thousand tons, prepared under the instructions of Dr. David Stewart, Chemist of Maryland State Agricultural Society, who says that this Compost is mainly valuable on account of the low price at which Ammonia, Phosphates and the Alkaline Salts are presented to the Farmer, all being derived from Refuse Materials, concentrated and presented in good order for distribution, without expense, labor and machinery, by a new process. We have been engaged in the manufacture of the above Fertilizer for nearly seven years, and we think all who have purchased it, and given it a fair trial, (and all we ask for it is a fair trial, side by side, with *any other Fertilizer*,) will give us the credit at least of presenting a Reliable Article at an Extremely Low Price.

We assure the Farmer we have a standard for every pound we manufacture. The above being put up in beds of say two hundred tons each, after being up for two years or longer is cut down, turned over, screened out, samples taken and sent to Dr. David Stewart for analysis, under whose instructions and under the eye of one of our firm every article is carefully weighed and manipulated to bring it to standard—therefore Farmers can rely on getting a pure article, and that at $20 per ton, worth as much, pound for pound, as Peruvian Guano, because it permanently benefits the land.

To poor and worn-out lands our Fertilizer is particularly adapted, having every element the plant requires. Farmers having that description of land will find it greatly to their advantage to give it a trial, the cost being trifling when compared with other Fertilizers in the market, while the results will compare with the best.

PRICE—$20 PER TON OF 2000 POUNDS—CASH.

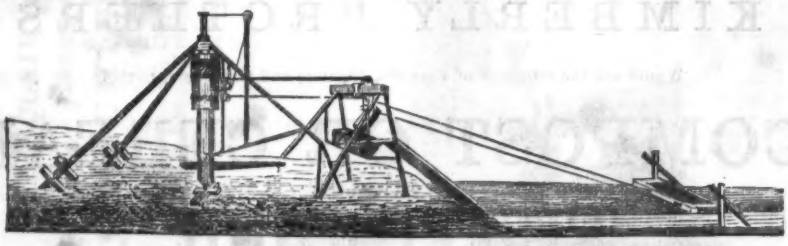
For sale by

KIMBERLY BROTHERS,

CORNER OF PRATT AND PATTERSON STREETS.

We have on hand also, LEACHED ASHES, mixed with Liquor of Bones and Meat boiled in refuse Lye from Soap Kettles—a cheap article for Agricultural use. Also, REFUSE SALT. [oct-tf.

BRYAN'S AGRICULTURAL MARL AND MUD LIFTER,



A STRONG AND DURABLE MACHINE, WHICH CAN BE WORKED BY ORDINARY FARM HANDS.

THE PURPOSE OF THIS MACHINE IS

To Raise the Deposit from the bottom of Ravines, Coves, Creeks, Rivers, or other places inaccessible to Teams.

The machine works with facility 170 feet from the Capstan, and, if well attended, will remove a large cart load every five minutes on an average. For raising marl, a different bucket is made, having a strong steel lip and a steel coulter on each side of the bale, cutting its way free both going out and returning, and will lift any marl clear of rock, or into which a spade or shovel can be forced.

The Bucket is made of the best Boiler Iron, and is so constructed that it deposits its load into the hopper, through which it passes into the cart—the labor of shoveling not being required—and by a reversed motion of the Capstan is carried out for another load.

With the Drum—thirty-two inches in diameter and twelve feet lever—two horses are required to work it in mud. The Drum can be reduced in diameter to suit the consistency of the marl—but one man and a boy are required to operate it. By referring to a drawing, with clear explanation, sent with each machine, any ordinary carpenter can put one up without difficulty.

But a few pieces of roughly hewn timber are required for the frame. Every thing else complete, with chain and rope enough to send the bucket 170 feet from the capstan, is furnished in Baltimore for the sum of $225, cash.

All orders promptly attended to or information given at LARRABEE'S FOUNDRY *corner of Front and Plowman streets, Baltimore, Md.*

BRYAN & BROTHER.

october

5 SILVER MEDALS,
3 DIPLOMAS,
70 1st Premiums!

J. MONTGOMERY & BRO.,

135 NORTH HIGH STREET,

BALTIMORE, MD.,

Inventors and Manufacturers of their

DOUBLE SCREENED

ROCKAWAY GRAIN FAN,

Celebrated for their efficiency, durability and ease in working.

The undersigned, during the past year, as well as in those which have preceded it, had the fullest evidence of the superiority of their ROCKAWAY GRAIN FAN.

Wherever a test has been permitted, at any of the Cattle Shows at which their Fan has been exhibited, it has uniformly been triumphant—and the people of the South need not go North for the purchase of a Machine with which to cleanse their grain, for our Fan is unequalled, we believe, by any other ever introduced.

☞ The price of our Fans in Baltimore, is $34; and in Lynchburg, $36. Orders addressed to us at either place will receive prompt attention. A liberal discount to the trade.

The attention of RICE PLANTERS is called to our Fan, constructed for CLEANING RICE, which is the best for the purpose ever invented, and which costs $2 less than our Double Screened Rockaway Grain Fan.

mar

LADD, WEBSTER & CO'S

FAMILY AND MANUFACTURING

SEWING MACHINES,

No. 131 W. BALTIMORE STREET,

Between Calvert and South sts., Baltimore.

W. H. WALMSLEY, AGENT.

Let Manufacturers, Planters, Farmers, Housekeepers or any other persons in search of an instrument to execute *any kind of sewing now done by machinery, make sure they secure the best*, by examining ours before purchasing.

☞ SAMPLES OF WORK SENT BY MAIL. ☜

A FEW TESTIMONIALS IN FAVOR OF OUR MACHINES.

(Extract from Letter.)

LIBERTY TOWN, MD., July 2, 1860.

I am very much delighted with your Sewing Machine. It is just the right thing. Should I not be able to procure another, I would not take *ten times the cost* of it for it.

THOMAS CARR.

MOUNT PLEASANT, MD., May 30, 1860.

MESSRS. LADD, WEBSTER & CO.—*Dear Sirs*: The Machine purchased from you in June last has been in constant use for tailoring purposes, and has stood every test to which it has been submitted, and gives entire satisfaction in every particular. The result of my experience is, that no sum, in reason, would induce me to part with it, if its place could not be filled with an exact counterpart. I would most earnestly recommend all who want a really good Sewing Machine to examine yours before purchasing.

JOHN W. OGBORN.

EASTVILLE, VA., May 10, 1860.

MESSRS. LADD, WEBSTER & CO.—*Gentlemen*: The Sewing Machine purchased for myself, and that for my friend arrived safely, and both are giving perfect satisfaction.

As regards the one being used in my own family, Mrs H. is so much pleased with it, that she says if she could not obtain another exactly like it, she would not take $1000 for it. Very truly, yours,

jan R. HOLLAND.

WHEELER & WILSON'S

SEWING MACHINES,

With new improvements, at reduced prices. The Wheeler & Wilson Manufacturing Company, having gained all their suits at law with infringing manufacturers of Sewing Machines, propose that the public shall be benefitted thereby, and have accordingly reduced the prices of their Sewing Machines. After this date they will be sold at rates that will pay a fair profit on the cost of manufacture, capital invested, and expense of making sales—such prices as will enable them to make first-class Machines, and, as heretofore, guarantee them for every particular.

NEEDLES, SILK, &c., at reduced prices.

FAIRS OF 1870.

WHEELER & WILSON

ARE AS USUAL, VICTORIOUS!

AWARDS BY VIRGINIA MECHANICS' INSTITUTE ON

SEWING MACHINES.

To WHEELER & WILSON, 1st Class Premium—Silver Medal.

To the LESTER CO., of Richmond, 2d Class Premium—Diploma.

To GROVER & BAKER, 3d Class Premium—Diploma.

ON SEWING MACHINE WORK

1st Premium to WHEELER & WILSON.

2d Premium to the LESTER CO.

W. MERRELL, Agent,

jan-1 203 Baltimore street, Baltimore, Md.

PIANOS AND MELODEONS.

NUNNS & CLARK'S, AND STEINWAY & SONS' GOLD MEDAL PIANO FORTES.

The undersigned is constantly receiving new supplies of PIANOS from these celebrated Factories, which are considered by competent judges to be in point of tone, touch, workmanship, durability, keeping in tune and not breaking strings, superior to any made in the United States. He is constantly receiving the most unbounded expressions of satisfaction and delight from those who have purchased these Instruments—in fact every Piano sent out from these warerooms has been the means of effecting other sales. F. D. BENTEEN,

No. 20 N. Charles-st., and 89 W. Fayette-st.

☞SECOND-HAND PIANOS FOR SALE. Pianos exchanged. MELODEONS from $45 to $200.

ORGAN HARMONIUMS, for large Churches, with 5 stops and two rows of keys, $250.

Particular attention is paid to orders by mail. nov

Fruit and Ornamental Trees.

J. L. DARLINGTON & CO.,

Morris Nurseries, West Chester, Pennsylvania,

Call the attention of their friends and customers to the South to their large and fine assortment of *Fruit Trees*, both Standard and Dwarf, also to their very full collection of all the small Fruits. We have all the best Fruits adapted to successful cultivation, comprising the best varieties of Apples, Pears, Peaches, Cherries, Plums, Apricots, Nectarines, Quinces, etc., etc.

☞ Ornamental Trees, both Evergreen and Deciduous, of all kinds and sizes can be furnished at reduced prices. We call special attention to our extensive stock of large and well shaped Evergreens. For particulars we refer to our Catalogues, which will be furnished gratis to all applicants. Freight paid to Philadelphia on all orders amounting to $5 or over. feb-1y

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HOWARD DANIELS,

Architect and Landscape Gardener,

247 Bowery, New York.

nov

Splendid Stock

OF

DRY GOODS

HAMILTON EASTER & CO.

Invite the attention of persons visiting Baltimore to the large and splendid STOCK OF GOODS in their

NEW MARBLE BUILDING,

Nos. 199, 201 and 203 Baltimore St.

Importing the greater portion of our stock—one of the firm visiting the various European markets twice a year for that purpose—we are prepared to offer to WHOLESALE AND RETAIL PURCHASERS goods of the best class at very low prices, including

Black and Colored Silks

AND

ROBES,

Fine Dress Goods

OF EVERY FABRIC,

Low and Medium Priced Dress Goods,

SHAWLS,

SCARFS,

MANTILLAS

AND CLOAKS,

GLOVES,

HOSIERY,

CRAVATS,

HANDKERCHIEFS, &c.

CHOICE GOODS FOR MEN'S WEAR.

Mourning Goods,

OF EVERY DESCRIPTION.

IRISH LINENS, LINEN GOODS, and articles of every description in the way of

Housekeeping Dry Goods.

☞ ALWAYS ON HAND, such Goods as are required by

Planters and Farmers,

FOR SERVANTS' USE:

Such as Bleached and Brown COTTONS, OSNABURGS, JEANS, LINSEYS, PLAIDS, Fulled Cloths, SATINETS, BLANKETS, &c.

☞ No DEVIATION FROM FIXED PRICE MARKED ON ANY ARTICLE.

WHOLESALE ROOMS on second and third floors. apl-1y